

TANDY LAPTOP COMPUTING

AUGUST 1992 -VOL. 9, NO. 7

TERRY KEPNER'S

# portable 100

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A MONTHLY PUBLICATION (EXCEPT COMBINED JULY/AUGUST ISSUE)

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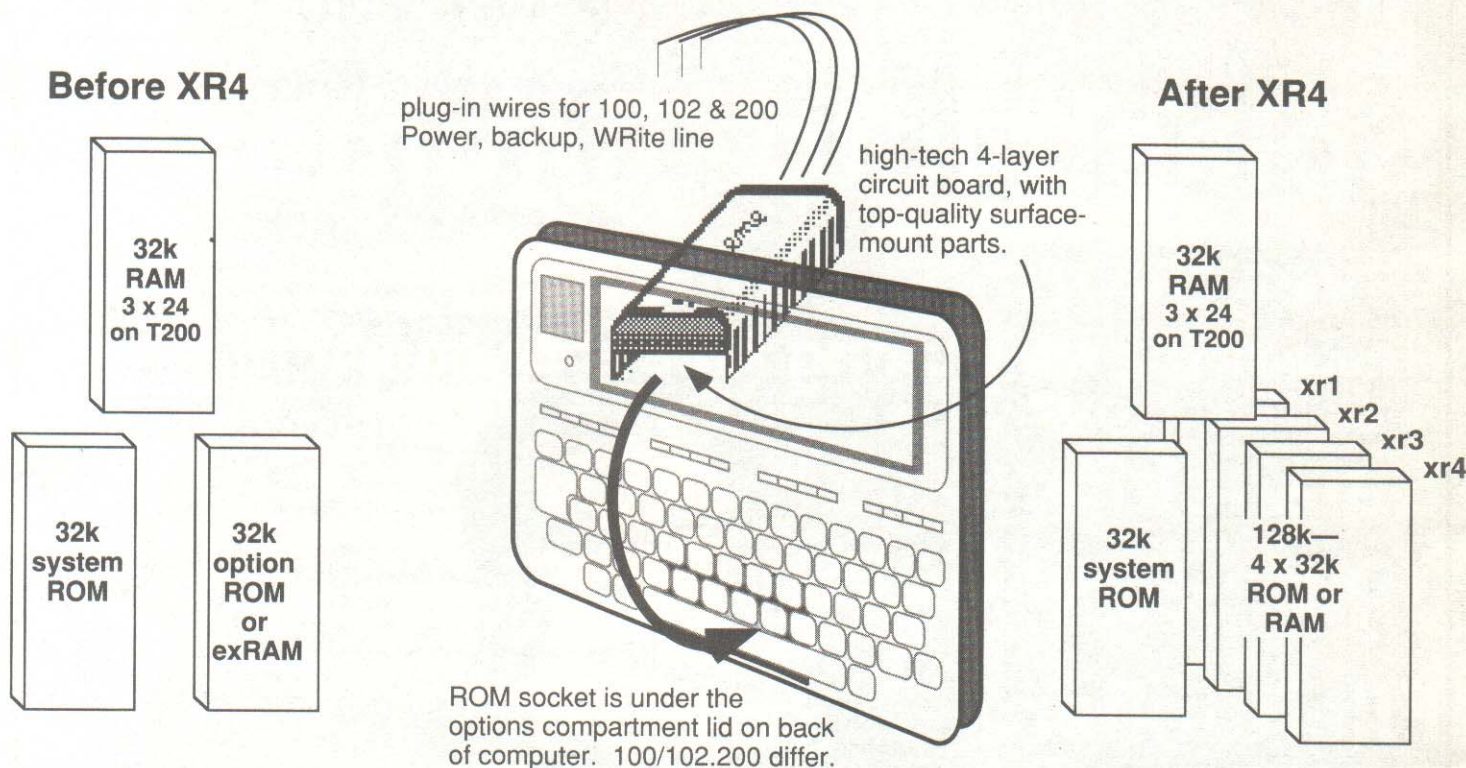
**MS-DOS 5 — Two  
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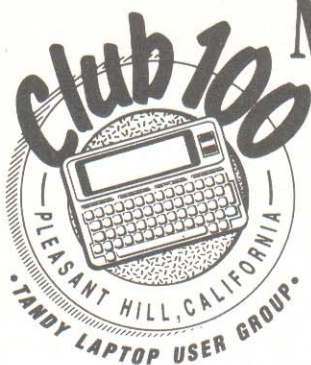


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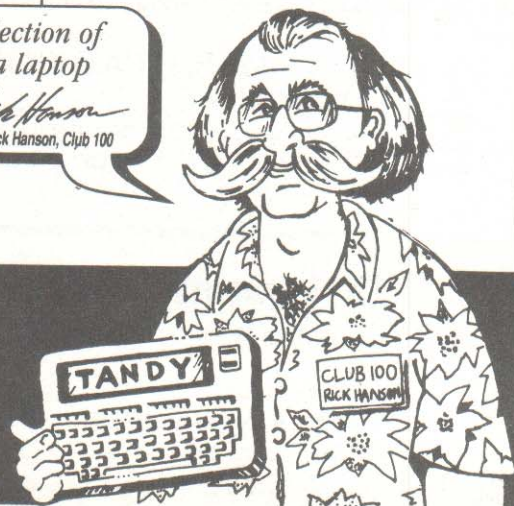
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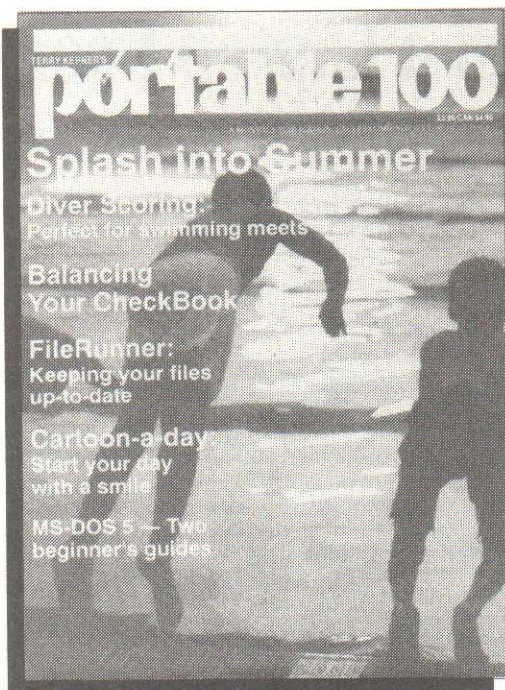
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ON  
THE  
COVER:

This magnificent swimming pool is part of the LeBlonde Boys' & Girls' Club, Cincinnati, Ohio, a United Way agency. An extensive aquatics program is only a small part of the overall activities and services offered by Boys' and Girls' Clubs of Greater Cincinnati Inc., which serves more than 7600 individual kids at risk in such diverse areas as drug abuse prevention, physical and mental fitness and socialization skills. Photo by Bob Liddil



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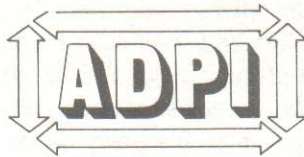
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## ROM WITH A VIEW

The scene on this month's front cover takes me back to a much simpler time in my life, to the summer of 1974, when I was Aquatics Director for the LeBlonde Boys' Club in Cincinnati, Ohio. I taught swimming to inner city kids, hosted swim meets, and supervised water-safety related activities in what then was a brand new state-of-the-art Boys' Club. My life literally revolved around that swimming pool, its maintenance, and the hundreds of kids who passed through that program on a weekly basis.

Computers were something foreign. They were as big as a station wagon, and as remote from my life as anything could be. Computers guided Apollo to the moon, but it took a room full of them to get the job done. Computers protected us from the scourge of atomic warfare, but they had to dig out a whole mountain in Colorado to accommodate them and the personnel that kept them running.

CB radio was the latest fad. Soon, the sounds of "Pigpen" and "Rubber Duck" would fill the air from coast to coast as an entire nation, including a very young me, rebelled against the hated 55 MPH speed limit. Even now, I chafe in places like Pennsylvania and New York and New Jersey, where stupid, out of touch politicians force me to crawl along on a modern expressway at arcane speeds, while their cops stand gleefully holding computer-operated laser speed meters that take your picture and mail a traffic ticket to your house.

Although the TRS-80 Model I was the first truly mass-marketed, ready to run computer (I bought one immediately and fell in love with it), the Model 100 was the first practical computer in my life. The old gray TRS-box sputtered and locked and quit in the middle of things, but the trusty Model T just kept on chugging (and still does), no matter where I am.

Seeing that swimming pool again after all these years puts the chronology of my life in perspective. There were so many things I could have used computers for in my Boys' Club days. There are so many times since I left LeBlonde that I would love to lose myself again in teaching kids to swim.

Now Boys' and Girls' Clubs of Greater Cincinnati Inc. deals with serious issues of life and death, drugs and homelessness and a hundred other cutting edge problems of the modern inner city. But they still find time to give swimming lessons.

And me? I use a dozen different kinds of computers in the course of a week, some with enough power to typeset a whole newspaper or calculate the dimensions of a Black Hole. But I still use my Model T for writing in the quiet times. Things change... and stay the same.

*Bob Liddil*

## Toolbox

Manuscripts were typed into Microsoft Word 4.0 on a Tandy 1400 HD, where they were edited, spell-checked, and had basic format instructions inserted. From there they were loaded into a Tandy 4000 (80386 CPU, Tandy EGA Monitor, Tandy LP-1000 LaserPrinter) desktop computer and placed into Aldus' IBM PageMaker 3.01. Once there, design decisions on photo, figure, and listing sizes and placements were made. Here, pull quotes are placed, headlines, intros, and bylines are sized and positioned, and advertisements positioned.

Normally, the Tandy LP-1000 is capable of emulating only a Hewlett Packard Laser Printer Plus, but with the

addition of the Destiny Technology Corporation (300 Montague Expressway, Suite 150, Milpitas, CA 95035. (408) 262-9400) PageStyler 4.5MB kit, the LP-1000 is turned into a fully-compatible PostScript printer, with all 35 native fonts that are found in the Apple LaserWriter Plus printer. The Destiny PageStyler is available through the Tandy Express Order Hardware system.

Page previews were output from the Laserprinter. When everyone was satisfied with the appearance, final pages were output and artwork and line art ads were positioned. The finished magazine was then delivered to the printer, who printed it, labeled it, and mailed it to you.

## TERRY KEPNER'S portable 100

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The four best programs for the Model 100 all on one ROM. 32K of power without using any RAM for program storage. This is the PCSG Snap-In ROM that just presses easily into the little ROM socket in the compartment on the back. You access the four right from the main menu like built-ins.

**Write ROM** — the definitive word processor for the Model 100. Function key formatting or dot commands. Search and replace. Library feature — inserts words, phrases or whole documents into text from just a code. MAP lets you see a picture of your document. In all there are 60 features and functions. No one can claim faster operation. FORM lets you create interactive forms with on-screen prompts that you can answer from the keyboard. Nothing else for the Model 100 compares with the features of Write ROM. Exactly the same as the Write ROM sold as a single program. Infoworld says it "makes the Model 100 a viable writing unit... sur-

passed our highest expectations for quality and clarity."

**Lucid Spreadsheet:** This is the one PICO magazine says "blows Multiplan right out of the socket" and Infoworld performance rated as "excellent" and said "makes the Model 100 compute." Gives you features you cannot get with Lotus 123. Lets you build spreadsheets in your Model 100 that would consume 140-150K on a desktop. Program generating capability with no programming knowledge required. Variable column widths. Includes find and sort with function key control. It's fast, recalculates like lightning. No feature has been taken from the original, only new ones added.

**Database:** This is a relational database like no other. You can do everything from mailing lists to invoices. No complicated pseudo-coding, you create input screens as simply as typing into TEXT. You are not limited by size; you can have as large an input screen as you wish. Prints out reports or forms, getting information from as many files as

you like. Complete math between fields. Total interface with Lucid worksheets.

**Outliner:** Does everything that Think-tank does on a PC but a whole lot better. Includes a Sort for your headlines. Lets you have headlines of up to 240 characters. Has cloning, hoisting and sideways scroll up to 250 characters. Like Lucid, this one sets a new standard for outliners. This is the way to plan and organize your projects.

Present Lucid and Write ROM owners can upgrade for \$150. If you have both it's \$125.

As usual PCSG sells the Super ROM on a thirty day guarantee. If for any reason you are not satisfied, simply return it for a full refund.

We are excited about this product. Super ROM gives the Model 100 the true power of a desktop. No other multi-program ROM has software that compares. But don't take our word for it. We invite you to make that comparison yourself. Priced at \$199.95 on Snap-In ROM.

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# Oops, We Goofed!

**Y**ou probably noticed that we had the wrong subhead on last month's review of Orbits. We accidentally overwrote the subhead for the FCC article in its place.

The Orbits review also stated that we could not get the program to run on the portable. Well, the solution to that one is very simple. All you need to do when you boot up the disk to type Orbits /e.

If you are interested in purchasing a copy of Fastlock Plus (reviewed in our May 1992 issue), you may reach the Rupp Corporation at 3228 E. Indian School Road, Phoenix, AZ 85018. (602)224-9922, fax (602)224-0898. The New York number listed in our review will refer you to this Phoenix number. Our apologies to our readers and to the Rupp Corporation for any inconveniences which this may have caused.

## SATISFIED WP-2 USER

I have been happy to read the letters from other WP-2 addicts, as well as your articles about its design and what one can do with it. For anyone who needs a light word processor for travelling or library work, it is so obviously the best solution. Dave Rosenstein (April 1992) was obviously right in blaming Tandy for a lousy marketing job. That started with the manual, which must be among the worst ever. And it must be admitted that even with a better manual, it is not as user-friendly as it could have been.

As far as I am concerned, the memory could have been devoted to better uses than the speller and the thesaurus, and I would love to be able to rebuild it to my specifications. Some would like spreadsheets; I would have liked macros.

The WP-2 has an amazing capacity to produce international characters, which is of particular interest to me as I work in many languages. But it has no way of making it easy, by modifying the keyboard of producing macros. So it is very laborious to do an accented letter in French or Spanish. Perhaps somebody has come up with a smart way?

Never mind, the WP-2 is an absolute gem — feather light, with an amazingly crisp screen and a superb keyboard. The word processing is primitive but adequate, especially for notes and drafts. And it was cheap — it should have found an immense market, not least in the developing countries.

It is sad that this marketing niche has

not been filled, and that people are toting around so-called notebooks and laptops that they do not need. In the meantime, those of us who discovered the WP-2 must be grateful to Portable 100 for all the support that you are giving us.

Goran Ohlin  
New York, NY

## M-200 FAN SPEAKS UP

I have subscribed for several years now to the only magazine that supports our two Tandy M-200s and I've contributed to the BBS. I think you're doing a great job. Your magazine is in the envi-

able position of being the ONLY source of support for the most human-compatible computer yet devised by the cunning mind of man. Please, don't cut your advertising space! I depend on it.

Thanks for the articles on Super ROM and UR-2. We have both. I prefer Super (for Lucid); my son uses UR-2 because of its unlimited word processing. Neither would be any good without the T-200.

Bernie E. Beshere  
Ketchikan, AK

## TANDY 100 IN PUBLISHING

Without my Tandy 100, I could not



The ADFPA Newspaper

## POWERLIFTING TODAY

Volume 5.3

April 1992

### Message from the President

I am writing this letter during the best time of the year for both my business and the ADFPA. It seems as if everybody must move in the month of March, April, or May.

My weekdays consist of approximately 11 or 12 hours at the store and the ADFPA office (which is in the same building) and preparing for weekends that consist of driving or flying to a powermeet in a chair and return for two days.

I am not complaining because I chose to do what I am doing and I will continue to do it to the best of my ability. After working for over 25 years I became self-employed 11 years ago.

I may never retire but I'll tell you, "I really enjoy what I am doing." It's not always easy but it's always interesting and challenging.

Telephone calls are never avoided but there are times when I may not answer your letters as quickly as I should or wish to. But please realize that my being the President of the ADFPA doesn't put food on the table for my family and that my earning a living for my family comes first.

The ADFPA definitely comes second before anything else. When we get to August through December I get carried as my business slows down a bit.

Enough of this bull, let's get down to business. We are in the process of having national meets almost every week and I am happy to say, "they are going great."

We had 65 lifters at the Collegiate Nationals, 220 at the Branch Press Nationals, 115 at the Lifetime Nationals, 140 at the High School Nationals, and about 65 at the Women's Nationals. That's a lot of lifters.

It proves that you want to support our program. Several states have run some great events or high school meets recently and our membership is really growing.

Our program of DRUG-FREE powerlifting is the heart of the program. We are not allowing. Other organizations are trying to copy what we are doing, and have done since 1971, and they are drawing lifters to their meets.

Our quality and longevity stands out as a unique item and we must continue to remain as such. It is up to you at the local level to promote our program.

Our quality and longevity stands out as a unique item and we must continue to remain as such. It is up to you at the local level to promote our program. I and the rest of the people in the ADFPA can only do so much. It is up to you to make our program grow.

Our National Meeting is coming up very quickly and I am reminding you to send in the following items before May 30 so that I can get a mailing to members of the National Governing Body regarding your wishes.

Please send in your:  
1. Agenda items.  
2. Nominations for the Branch Board of Directors.  
3. Nominations for the National Board of Directors.  
4. Bid for all National meets for 1992 and 1994.  
5. Bid for the "Win 50" team and open meets for 1992.

Please feel free to put any of your wants or needs in writing and send them to us at the National Office. My administrative assistant, Jay (he's also my son).



Shawn Cain was the 220's with a 1,829.7 pound total that included a 663.2 squat, a 413.2 bench, and a 733 deadlift. His total established a new world record.

## Many records set in first North American Championships

By JOHN PETRY

Dennis and Sandy Brady did their usual magnificent job in putting on their second international competition, the WDFPF North American Championships held at the Radisson Lincolnwood in Lincolnwood, Illinois.

Sixty-two competitors from both the United States and Canada took part in the two-day competition. In all, 33 new WDFPF world records were set during the weekend.

Starting out the first day of competition were the women and the men's 52 to 82.5 kilogram weight classes. In the women's division Judy Githens (62.5 kg) set a new world record in the 50-54 kg division for squat, deadlift, and total. Judy was eight for nine for the day in women's weight class.

Laura White took home the first place trophy in the 50.5 kg class with a total of 100, 50, and 135 kg total 285 lbs for first international competition. In the 53 kg class, master lifter Sue Raker set all new records in the 45-49 age division. She lifted 99 for the day but missed fourth attempt at missing her records.

Co-meet director Sandy Brady set all new master

record in the 58.5 kg 40-44 division. She moved up in weight since the World Championships in Australia and now has world records in two weight classes. Eighteen year old Sarah Colder had an excellent day by setting all new WDFPF world records in the 63 kg class. With a 7-9 day she achieved a 377.5 kg total.

Melissa Bellow won the open division at 80 kg with a 382.3 total while the teen division was won by Jenn Davis (18-19) with all new records that totaled 342.5.

The unlimited, open and master, was won by Cyndi Regan. She set all new master's records in the 40-44 age division with 202.5, 130, 185, and 515 respectively for the squat, bench, deadlift, and total.

In the men's competition the winner in the 52 kg class was Roger Thompson with a 425 total. Second place went to Andy Leonard while Charles Kelly (14-15) took home the teen trophy with a 282.5 effort. Master lifter Freddie Higgins (40-44) headed into the WDFPF record book with his 9 performance in the 50 kg's. The open was won by Miguel Castro with his 462.5 total while the teen division was won by Chad Rowell (16-17).

In the 60's, Charlie Foster won the open and

placed second in the masters with his 347.5 total. The masters were won by John Latta with a 367.5 and the teens won by Sue Kelly (15-15).

Eric Kopperstein took home open 67.5 kg division at with a 311.5 total. The 73 kg open class was won with a total of 615 kg by Ray Hollings. The masters (50-54) were won by 54 year old Rich Flores with a 562.5 total that included a master's world record. Ed Bates won the 40-44's with a 415 kg total.

Cam Thompson took home the first place trophy in the open 82.5's by ending the day with a 628.5 total. The teens were won by eighteen year old Jason Wojcik who totaled 500 to set all new world records for age and weight.

In the masters Pat Malone won the 40-44's by totaling 540 kg's while Jim Klemm (40-44) placed second.

Please see NORTH AMERICAN, page 2

## The borderline between drug and supplement

By MICHAEL L. CHOUINARD

Drug use for the enhancement of athletic performance is an issue of gray area made up of personal ethics, health, sportsmanship, science, law, and many other aspects too numerous to mention.

There are no general principles to define the borderline between right or wrong, ethical or unethical in circumstances. In some cases there is a fine, and perhaps indistinguishable, line between what is perceived as drug use and legitimate strength supplementation.

Furthermore, the borderline between drug use and supplementation can be clearly crossed without the intention or even recognition of doing so.

I've illustrated the difficulty involved in distinguishing this borderline between training

further states that he has consumed only healthful supplements such as vitamins, minerals, and amino acid formulas. Further tests revealed that this particular athlete has abnormally low levels of epinephrine.

In addition to low serum and urinary epinephrine, acute increases in circulating hormone (EPI) were observed in this individual in response to a newly developed natural supplement available in most health food stores. Falsely-remembered hormone (FSH) and LH are large protein hormones that regulate the production and action of natural testosterone in the testes.

Although acute changes in LH are possible in response to some dietary factors, such increases are short-lived and usually regulate themselves through a

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publish *Powerlifting Today*. Almost everything in the paper is first typed into my trusty Model 100; that includes articles, records, rankings, contest results and schedules of contests.

Those files are then sent to my art director, who typesets the files and lays out the paper for publication, which goes to 6,000 drug-free powerlifters nationwide.

I use my old TRS Model III to maintain subscriptions and advertising data bases. These machines have served me well; I've yet to tap their full potential.

**Gary Morrison**  
*Powerlifting Today*  
Wyoming, MI

### TANDY: ON THE ROAD TO WHERE?

I hate to see it, and I even hate to say it as a satisfied user in the past of Tandy notebook computers, including the Model 100, 102, 200, WP-2, 1100FD and a 1500HD, but I think Tandy notebooks are fading—and fading fast!

The older machines—anything below a 386—are pretty much history. Tandy is moving on, leaving customers with older equipment to fend for themselves, and heading for the high road, the one paved with state-of-the-art equipment, at state-of-the-art prices, not where

Tandy has been in the past. *DeskMate*, as good as it is, as simple and practical, appears dead. *Windows*, not *DeskMate*, is being bundled with all the new high-end Tandy machines. That tells you something about the future of *DeskMate*: It has none—none whatsoever!

## How come Tandy hasn't introduced a fully functional palmtop computer?

Tandy just introduced a new 386SL notebook. Suggested retail: \$2995. Great! Who's going to buy it in '92 at that price? If Compaq sells its new Contura notebooks at \$1,800 or less in discount stores, where does that leave the new Tandy notebooks? Tandy should be introducing a new SL computer for under \$1,500.

How come Tandy hasn't introduced a fully functional palmtop computer yet,

one with a great screen and keyboard? Here's a niche Tandy should have covered months ago. Now it will probably end up reacting to a market it should have created. Sharp's new PC3000, Memorex's Commuter Computer, the Zeos Pocket PC and the Tidalwave Palm-Star, the first of what promises to be a long list of entries, are about to hit the scene, but where's Tandy? Notice that I didn't even mention the subnotebook category, which already has new products from Gateway and Dell, but none from Tandy—at least not yet.

As it is, few Tandy retail stores, with the exception of the Computer Centers and some Computer Plus stores, even stock the full Tandy notebook product line, what's left of it. Could it be that demand for these products isn't what it should be, what it could be, because the price is too high?

**Tandy Announces**, a Tandy feature on CompuServe, hasn't announced anything new from Tandy in months. One of the last announcements was that *DeskMate* in Spanish was now available. That may be big news in Mexico City, Miami, Laredo, Texas or East L.A., but aside from those locations and maybe a few others, how many people really care at this point? After all, *DeskMate*'s future appears to be a thing of the past, regard-



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From the Tandy 200 MENU you will be able to enter memos, rename files, set alarms, display and run programs that are in other banks, and much more.

Cut TEXT from one bank and PASTE it to a file in another bank. Open a "window" while editing in bank #1, and view other files from bank #2. Disable "word wrap" while editing for another perspective of your TEXT file.

While on-line with TELCOM, display FILES and Bytes Free, enter and edit TEXT files, or jump to another RAM bank without losing the host computer connection.

BASIC programs can read/write to files in other banks. Jump to programs in other banks or bring the program into the current bank and run it.

XOS provides fundamental database entry and retrieval functions with user defined fields, prompts, and display parameters. A bargain at

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## Node Datapac Users Replace your ROM!!

RAMDSK.CO will replace the Node ROM and allow you to use one of those other ROMs you've always wanted. Retain all of the Node menu functions, plus the ability to move, kill, and name Datapac files under program control. A MUST for Node Datapac owners who have other option ROMs. RAMDSK.CO is available for the M100/M102 and T200... only

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N-READ.CO will allow a BASIC program to read a TEXT file stored in the Datapac without moving the file into RAM. An absolute necessity for multi-file database projects where the datafiles are kept in the Datapac. N-READ.CO is only \$9.95 but is yours for \$5 when ordering RAMDSK.CO.

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less of what language it's in.

Ed Juge, Tandy's director of Market Planning, who used to write a regular monthly user column for CompuServe, hasn't written a column for this network since February.

Try sending any feedback to Tandy Support. If you're lucky, you'll hear back in a week. If you're not, you won't hear back at all.

I used to be sold on Tandy and Tandy products, but right now I see Tandy desperately scrambling for position, seemingly abandoning its once glorious past and heading for a very uncertain future. To me, it's all bad news, real bad. What do you think?

**Pat McClurg**  
**CompuServe [73240,2533]**

Yes, Tandy has been selling off its inventory of older computers. But that's to make room for its new 486 models. Look for them in your local store shortly, if they're not already there. At that same time, expect to see sale prices on the 386's in stock.

As far as Tandy versus the "big boys", don't forget that Tandy does not consider itself a direct competitor with IBM, Apple, etc. They view themselves as a "consumer electronics store" where their primary competitors are such places as Sears, Montgomery Ward, and so on. Based on that viewpoint, look for Tandy to produce a palmtop

when you see them on the shelf at Sears. Additionally, this gives Tandy more viability than IBM, et. al. What would happen to IBM if the bottom fell out of the computer market tomorrow? Hnnmm? Major repercussions, right? Tandy would be affected, too, but not to as large a degree, since their business is not totally dependent upon the computer industry.

- tk

## I would like to network with other Tandy 600 owners.

### A 600 USER WANTS TO KNOW...

I have a Tandy 600 laptop. All of my questions refer to this model.

I would like to network with other 600 owners. Can you refer me to a club or to individual 600 owners?

Were software games ever developed for the 600? If so, where might they be purchased?

Are there any articles written specifically about the 600 in previous issues of *Portable 100*? If so, please identify these issues.

I would like to know if any 600 owners have developed their own programs in BASIC?

Thanks for publishing the WP-2 architecture article (May 1992). I would like to see more articles on specific laptop specifications, since I am a new laptop owner. Thanks for providing a written portable network. Your authors write in a format and with the assumption that the readers of the articles have some degree of portable-user intelligence. Indeed, we do. I think my portable-user intelligence is limited, but it is improving!

**Janet Hamill**  
**Browning, MT**

A listing of previous 600 articles is on its way to you.

Plus, you should contact Club 100, Rick Hanson's operation. While it focuses on the Tandy 100 and 102, there is also some support for the Tandy 600 people.





COMPATIBILITY: Model 100, 102, 200 (untested).

# The Portable Computer In Sports

*Take your model 100 to sporting events!*

*by Peter L. Terry*

**T**he field of sports offers many ideal applications for portable computers. Scoring, record keeping, analysis and general event management can be made easier with the flexibility of the portable computer. This program, *DIVSCR.BA* performs the calculations and can provide a printed record for scoring diving events. The techniques used here should be easily adaptable to other judged sports such as figure skating and gymnastics.

## FUNDAMENTALS OF DIVING SCORING

The diving rule book assigns each dive a Degree of Difficulty factor (referred to as a DD). DDs range from 1.0 for a Forward Jump (1 Meter Springboard) to 3.5 for an Inward 3 1/2 Somersault, Pike Position (10 Meter Platform). After a dive is per-

**This program is very easy to use even with no familiarity with computers.**

formed, a panel of judges (usually five) individually award points to the performance of the dive on a scale of zero to ten — zero being a totally failed dive, with ten being a perfect dive. Points are given in increments of one-half point (5.5 is a valid score while 5.3 is not).

Scoring, for a five-judge panel, is calculated as follows:

1. The highest and lowest scores are eliminated,
2. The remaining three scores are added together,
3. Then multiplied by the DD.

The result is the overall score for the dive.

NOTE: This is the scoring system used for a five judge panel under FINA, NCAA, National Federation and U.S. Diving rules. Should you modify the program for a different panel size, check the rule book in effect for the appropriate calculations.

```

10 CLS:PRINT:PRINT:PRINT:INPUT"Do You Want a Printout < Y or N>";P$
20 IFP$="Y"ORP$="Y"THENGOSUB1000
30 CLS
40 PRINT:PRINT:INPUT"DEGREE OF DIFFICULTY";DD
50 IFP$="N"ORP$="N"THEN100
60 H=0
70 LPRINT
80 LPRINT" DD          — SCORES —
   - OUT -          SCORE"
90 LPRINT
100 CLS:PRINT"DEGREE OF DIFFICULTY "DD
110 INPUT"  FIRST SCORE";S(1)
120 INPUT"  SECOND SCORE";S(2)
130 INPUT"  THIRD SCORE";S(3)
140 INPUT"  FOURTH SCORE";S(4)
150 INPUT"  FIFTH SCORE";S(5)
160 FORQ=1TO5:B(Q)=S(Q):NEXTQ
170 FORX=2TO5:FORX1=1TOX-1:IFS(X)<S(X1)THEN190ELSENEXT
180 NEXTX:GOTO200
190 B=S(X):FORX2=XTOX1+1:STEP-1:S(X2)=S(X2-1):NEXT:S(X1)=B:GOTO180
200 TS=(S(2)+S(3)+S(4))*DD
210 PRINTCHR$(27)+"p";S(1);CHR$(27)+"q";S(2);S(3);S(4);CHR$(27)+"p";S(5);CHR$(27)+"q";" SCORE"TS
220 BEEP
230 IFP$="Y"ORP$="Y"THEN LPRINT USING"#.#";DD;LPRINT" ";LPRINT USING"#.#";B(1);B(2);B(3);B(4);B(5);LPRINT" ";LPRINT USING"#.#";S(1);S(5);LPRINT" ";TS:LPRINT
240 H=H+1
250 INPUT"  Enter DD of next dive";DD:IF H=20 GOTO60
260 GOTO100
1000 IFINP(187)=194 ORINP(187)=195 THEN100
1010 PRINT"          Printer not detected"
1020 PRINT"  Enter Q to Quit and connect printer"
1030 INPUT"Any other key to continue W/out printer";C$
1040 IFC$="Q"ORC$="q"THENEND

```

*Continued.*

Listing 1. The Dive Scoring program uses U.S. Diving rules.



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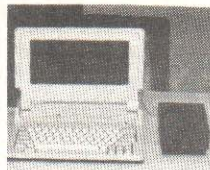
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Scores are recorded, at the scoring table, in the order given by the judges (always the same order). Eliminated scores are noted and the overall score is recorded.

### USING THE PROGRAM

This program is very easy to use even with no familiarity with computers. Running on a Model 100, it has been used at numerous diving meets in the New Jersey area. Screen and printout formats are a product of actual meet experience.

When the program is started, you are asked if you want a printout. If you answer yes and a printer is not detected, you are given the choice of continuing without a printer or a dignified escape to ready the printer.

You are then asked for the DD of the first dive. Enter this in decimal format, e.g., 1.6, when the dive is announced.

The screen displays the DD on the first line then prompts for the first judge's score. Enter the scores in decimal format as requested. When the fifth judge's score is entered, the scores are sorted and the overall score calculated. Scores are displayed in sorted order and the eliminated scores are shown in reverse video. While this display is not absolutely necessary, it does, however, assure the scorer that the Model 100 is doing its job properly.

The bottom line then prompts for the DD of the next dive. Type this number but do not press ENTER until you are ready to enter scores for the next dive. The reason for this procedure is that the DD of the next dive is usually announced long before scoring is complete for the current dive and it permits the full information on the current dive to remain on the screen as long as possible.

### PRINTER OUTPUT

The printer output differs from the screen display in that the judges' scores are printed in the order given for recording purposes. Eliminated scores are then shown. Scoring is double spaced and a new heading is printed every twenty dives for clarity.

### PROGRAM DESCRIPTION

To keep the program compact, no REM statements are included. Program flow is quite simple, however, and should be easy to follow.

Lines 10—20 provide the printer request prompt and call the printer detection subroutine if a printout is requested. If no printout is requested, line 50 skips the header printing routine.

1050 P\$="N"  
1100 RETURN

End of listing.

Lines 60 — 90 contain the header printing routine. When entered the dive counter, H, is reset to zero and the header is printed.

Judges' scores are input into the array S() by lines 110 — 150. A copy of the score array prior to sorting is made in line 160. This array, B(), is retained for printer output.

Lines 170 — 190 contain the sort. This sort is one I cobbled up years ago while fooling with executing standard sort algorithms within FOR-NEXT loops. It is quite fast for a BASIC sort. Although it is a bit of overkill for just sorting the five numbers here, I've included it as it may be useful to others as an easy sort in other programs.

Overall score is calculated by line 200. Scores are output to screen in line 210 and printer in line 230. The reverse video invocation in line 210 is for the Model 100 and will probably have to be modified or eliminated for other computers.

Line 240 indexes the dive counter for the printer heading. Lines 250 prompts for the next DD and sends execution around again.

The subroutine starting at line 1000 checks for the presence of a printer. If no printer is detected the operator is presented with two options. Line 1000 is a printer detect routine for the Model 100. For the Model 200 I believe it should be replaced by: 1000 IF INP(187)=234 THEN 1100

I hope this program and programming techniques are found useful. I would appreciate any correspondence by users.

*Peter L. Terry is a mechanical engineer in Belleville, NJ and uses computers in his work primarily for control and analysis. His wife Trina is certified to judge diving competitions under NCAA, National Federation and U.S. Diving rules. She has judged diving at all competitive levels in the New Jersey area and is past secretary of U.S. Diving for New Jersey.*





## COMPATIBILITY:

Tandy MS-DOS Computers (EGA or higher graphic display required).

# Cartoon-A-Day Calendar Plus:

*Not only can you start your day with a smile,  
you can schedule your appointments, maintain a to-do list,  
and decorate your memos with appropriate cartoons.*

*by Terry Kepner*

**A**fter seeing scores of dry, business-related appointment books and calendar programs for computers, it's a relief to see the release of *Cartoon-A-Day Plus*. This calendar system features The Kevin Pope Collection of cartoons, and his off-beat humor is amusing and somewhat strange to behold.

The program is easy to install and features two versions. The first version is a small program that simply places the current daily cartoon, the current date and time, and a calendar of the current month (see figure 1). The large version uses the small version's only screen as an opening screen which then moves to a main menu screen where you can select Day planner, To do list, Set time/date, Year planner, Print Cartoon, Cartoon options, Add cartoons, or Quick memo.

Installation is as simple as putting the disk in drive A and typing *INSTALL*. The program prompts you for which version you want (small or large).

The installation program is smart. Should you select the small version then later decide you want the larger version, the installation program realizes that part of the program is already on your hard drive and only installs the changes required. This saves you time and effort.

The large version not only gives you the features I mentioned above, it also includes a Terminate-and-stay-Resident option. This lets you call forth the calendar/cartoon even if you are in another program. Perfect for making appointment changes, altering your to-do list, or just taking a cartoon break. The TSR mode is required for the alarm options to work (the program can't very well tell you about your 3:00 PM appointment if it isn't even running, now can it?). You can, of course, tell the TSR to go away so

that another program can use that precious RAM.

## THE BUSINESS END

The Day Planner is just that, a screen dividing the day into separate sections for your appointments or schedule. You can add and delete times as you need them, and set alarms so that your TSR can warn you when you need to divert your attention elsewhere.

The To Do List is a simple list of up to forty items, with a priority number assignment. Changing the priority number of an item moves it up or down the list.

Setting Time and Date will change the clock on your PC. And it does, too. Not

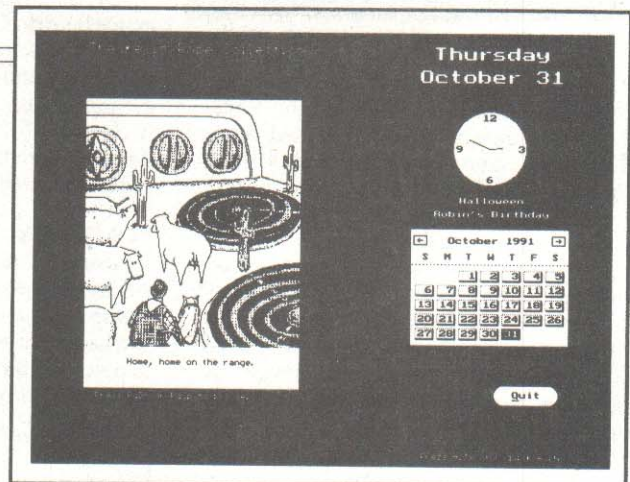


Figure 1. A sample screen of the small version of *Cartoon-A-Day Plus*. The cartoon changes every day.

the RAM clock, but the hardware clock. Turning your computer off and then back on does not lose the changed time stored in the clock.

The Year Planner displays the entire

Thursday, July 2, 1992																																																
JAN			1	2	3	4		FEB						1		MAR	1	2	3	4	5	6	7		APR																							
	5	6	7	8	9	10	11		2	3	4	5	6	7	8		8	9	10	11	12	13	14	5		6	7	8	9	10	11																	
	12	13	14	15	16	17	18		9	10	11	12	13	14	15		15	16	17	18	19	20	21	12		13	14	15	16	17	18																	
	19	20	21	22	23	24	25		16	17	18	19	20	21	22		22	23	24	25	26	27	28	19		20	21	22	23	24	25																	
	26	27	28	29	30	31	23		24	25	26	27	28	29	29		30	31	26	27	28	29	30																									
MAY				1	2			JUN		1	2	3	4	5	6		JUL				1	2	3	4		AUG					1																	
	3	4	5	6	7	8	9		7	8	9	10	11	12	13	5		6	7	8	9	10	11	9	10		11	12	13	14	15																	
	10	11	12	13	14	15	16		14	15	16	17	18	19	20	12		13	14	15	16	17	18	16	17		18	19	20	21	22																	
	17	18	19	20	21	22	23		21	22	23	24	25	26	27	19		20	21	22	23	24	25	23	24		25	26	27	28	29																	
	24	25	26	27	28	29	30		28	29	30					26		27	28	29	30	31	30	31	27		28	29	30																			
SEP			1	2	3	4	5		OCT				1	2	3		NOV	1	2	3	4	5	6	7		DEC					1																	
	6	7	8	9	10	11	12	4		5	6	7	8	9	10	8		9	10	11	12	13	14	13	14		15	16	17	18	19																	
	13	14	15	16	17	18	19	11		12	13	14	15	16	17	15		16	17	18	19	20	21	18	19		20	21	22	23	24																	
	20	21	22	23	24	25	26	18		19	20	21	22	23	24	22		23	24	25	26	27	28	20	21		22	23	24	25	26																	
	27	28	29	30				25		26	27	28	29	30	31	29		30																														
Paid							Unpaid							Total							Used							Allocated							Remaining													
Vacation							0							0							0							0							0							0						
Sick Days							0							0							0							0							0							0						
Personal							0							0							0							0							0							0						
Holidays							0							0							0							0							0							0						
Other							0							0							0							0							0							0						

Figure 2. The Year Planner lets you track your special days, including anniversaries, birthdays, and other important events that reoccur on a yearly basis.



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Phone: 602-997-1523 © 1989 TMO

Circle 128 on readers service card.

year at a time. At the bottom of the calendar is a table displaying the Vacation, sick, personal, holiday, and other days you have used so far this year, divided up into used, allocated, and remaining, with the added information of paid and unpaid.

The idea is that you tell the calendar program how many of each of those categories you have, then go into the calendar area and mark the days unused so far. Naturally, the Day Planner can be used from within the Year Planner to set appointments and alarms.

## Calendar-A-Day Plus lets you print the cartoons included!

### THE FUN PART

Unlike other programs, *Calendar-A-Day Plus* lets you print the cartoons included! You have several options here which let you control the scale (size) of the cartoon printed, the position (distance from left and top margins), printer port, and whether you use portrait (vertical paper) or landscape (horizontal on the page).

Not only can you print the cartoons, you can include them on memos you send to other people. Thus, you can page through the cartoons available, select the

## SOFTWARE REVIEW

appropriate cartoon, write a full page memo, and then print it all out. And face it, a memo with cartoon is far more likely to be read than one that simply arrives written out.

The cartoon options offered from the main menu are very simple, either replace the current cartoon by removing it from the set, or remove the current cartoon automatically at the end of each day. And this betrays the first problem I have with this package: it throws away the current cartoon at the end of the day! I can't go back and look at an old cartoon, it is gone. So, while you can page forward to look at the cartoons yet to come, you can't look at the ones that passed.

On the other hand, you could always go to the Add Cartoons selection and just reload the same file of Kevin Pope cartoons onto the end of the current set. Not elegant, but it works. I assume from the inclusion of this selection, that Individual Software is planning future releases of just the cartoon sets.

### SUMMARY

*Cartoon-A-Day Plus* is a fun little package. It works, it's simple, it's small. It supports a variety of printers, including laser printers, but all you really need is a computer that emulates a standard Epson/IBM printer. Because all the car-

toons are black and white, they reproduce perfectly on any dot matrix printer. Naturally, the various lists and schedules can be printed at any time you need a copy.

While it cannot compare with *Sidekick* or some of the other industrial strength daytimers, neither does it require megabytes of disk space and hordes of diskettes to do the job. Plus, you can print out the cartoons you like. I like that. A lot.

I wonder what the next collection will have?

### PRODUCT SPECIFICATIONS & SUPPLIERS

#### *Cartoon-A-Day Plus* — \$39.95

Requires MS-DOS 3.3 or higher; 512K RAM; EGA, VGA, MCGA, or Hercules Graphics card; and a hard disk drive.

Individual Software Inc.  
5870 Stoneridge Drive #1  
Pleasanton, CA 94588-9900  
800 331-3313

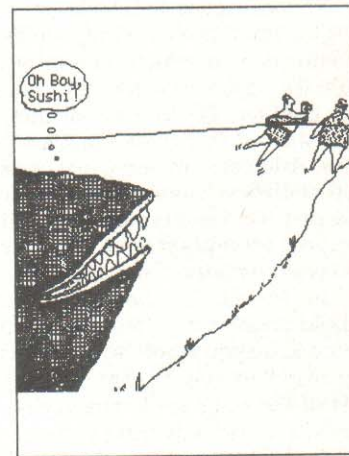
European Office  
Interleuvenlaan 21, Q2  
3001 Leuven  
Belgium  
016/29.36.82

To: All our readers

From: The staff at Portable 100

Date: 6/16/92

Re: Cartoons



A fast test of the quick memo feature ▣

Figure 3. Write memos that attract attention by including a cartoon. (The memo above has its bottom cropped off for this article.)



## COMPATIBILITY: MS-DOS computers.

# Help! How do I . . .

*Two books for the MS-DOS neophyte give you a painless start on Microsoft's latest DOS — MS-DOS 5.0.*

*by Terry Kepner*

**A**t last, two books that provide a user-friendly approach tailored to teaching new users MS-DOS, that antiquated operating system with an arcane command structure that makes sense only to the dedicated computer tech-head.

MS-DOS has always been its own worst enemy. Its user-hostile terse responses (*Abort, Retry, Ignore* is one such helpful prompt), bizarre command structure, and indecipherable manual have prevented millions of people from using their computer to its fullest potential. It has, in fact, convinced millions of people buy Macintosh and Amiga computers, just to escape that horrid C: prompt.

Into this breach have stepped two book publishers trying to make MS-DOS easier for the new user to understand and use: MaranGraphics and Que. Both adopt a visual approach to explaining the commands covered, but the end results are dramatically different.

## EASY DOS

*Easy DOS* is Que's entry. At 198 pages, it is the thicker of the two books. Measuring eight inches by ten inches, the book is smaller than most notebook computers. The first thing that strikes you are the colors. The outside two inches of every page is shaded while the rest of the page is standard white.

The sections that deal with book related topics, Table of Contents and Index, have this edge-strip shaded purple. The Introduction and Reference sections are a light blue. The section covering Basics — Using Your Keyboard, Typing a command, Taking Care of the Computer, and so forth — is pink. The section between, the meat of the book, is a light green.

*Easy Dos* is a well thought-out book. Instead of being organized by MS-DOS commands it is organized by task, what the user wants to do. Further, each task is given two pages, one as a complete explanation with step by step instructions, the other as a summary. Plus, pictures of what you see on the screen are shown, both before and after typing the command.

Thus, instead of lumping everything that has to do with directories under the listing Directory, the book has a table of contents listing *Display files*. On that left-hand page are step-by-step instructions and a complete explanation of what typing *DIR* gives you. On the opposite page is the summary.

A separate task, and starting on a left-hand page, is given to *Make a wide file*

listing, using the command *DIR /W*.

Finding a task is simple, you need neither Table of Contents nor Index. In the shaded area of every green left-hand page, at the top left and under the word **TASK**, is given the task for that page. To find a command, all you need to do is thumb through the pages.

On the right-hand pages, midway down, is the word **REVIEW** and the task being reviewed. So, no matter which way you are thumbing, you can always see which task is covered in that set of pages.

Each command covered is given a thorough explanation of what you must type and why. For example, on page 62 is the task *Remove a directory*. Underneath a picture of a screen with the C: prompt and the command *RD \DATA* are these

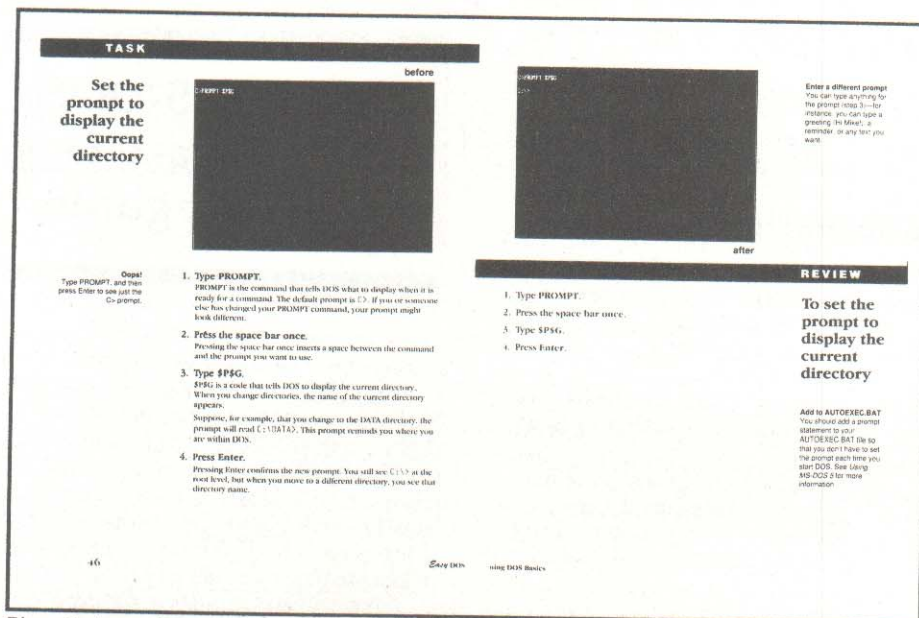
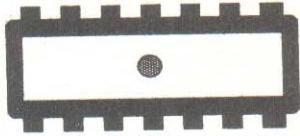


Figure 1. A sample two-page spread from *Easy DOS*. These pages cover the DOS command *PROMPT*.



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instructions:

1. Type RD.  
RD is the remove directory command. Typing this command tells DOS to remove and empty directory.
2. Press the spacebar once.  
Pressing the spacebar once inserts a space between the command name and the directory name.
3. Type \DATA.  
Data is the name of the directory you want to remove. The entire command is RD \DATA. If you do not have a directory named DATA, type the name of the directory that you do have. Make sure it is a directory you no longer need. (To create the DATA directory, see TASK: Make a directory.)
4. Press ENTER.  
Pressing Enter confirms the command. The directory is removed.
5. Type DIR and press ENTER.  
This step displays a directory listing so that you can verify that the directory is removed.

In these instructions, the words you type (DIR, \DATA) or the actions you

perform (space bar once, ENTER) are in red. The explanations beneath each command or action is in blue. The rest of the text is black.

On the right-hand page, at the top, is a picture of the display after performing instruction number five. Below it is the review of the task, essentially the first

## For the MS-DOS terrified, Easy Dos is the best guide.

three instructions I have listed above, but without the blue explanatory text.

Easy DOS covers not only the DOS commands, but also the new MS-DOS User Shell, DOSSHELL, a graphical user interface designed to make MS-DOS simpler to operate and use. Unfortunately, while Easy DOS devotes seventy-four pages to DOS commands, only forty-six pages are about DOSSHELL.

This translates into a difference of twenty-two Shell tasks covered versus

## MOVING UP

thirty-seven DOS tasks. (The book gives twenty-two pages to covering basic issues such as Understanding Disk Organization.)

While the book covers thirty-seven DOS tasks, this translates into only twenty-two commands covered. (BACKUP, CD, CHKDSK, CLS, DATE, DEL, DIR, DISKCOPY, FORMAT, LABEL, MD, PATH, PROMPT, RD, RE-NAME, RESTORE, TIME, TREE, TYPE, UNDELETE, VER, and VOL). On the whole though, trying to present more commands and tasks in the book would have defeated the purpose of it: to be a friendly and simple guide for novice MS-DOS users.

The reference section, twenty-two pages, is divided into four subsections. The first, one page, is a quick index to twenty of the commands covered (skipping PATH and TREE). The next two pages list common error messages and what they mean in English (and good explanations, too).

The following sixteen pages, the Software Guide, discuss common software packages (word processors, spreadsheets, data bases, and seven other categories), telling you what they do, why people might want them, and sample screen displays so you can recognize them should you accidentally stumble into an unfamiliar program.

The final four pages are a glossary to some of the terms introduced in the book. Definitely a help to the true beginning computerist.

## MARANGRAPHICS' SIMPLIFIED USER GUIDE TO MS-DOS 5.0

Marangraphics' book packs a lot more information into fewer pages than Easy DOS. While it also uses pictures of the display screen to show you the before and after of each command covered, it also includes intermediary screen shots where appropriate, and illustrates more variations of the commands. While the information, at first, might appear overwhelming, the organization makes it easy to pick out only the specific command and variation that interests you.

For example, the four pages that cover the COPY command show examples of copying a file to another drive using the same name, with a different name, and using the "\*" wildcard; within the same directory, with the asterisk wildcard, and to another directory; and copying from the keyboard. All this, with pictures, in just four pages.

The layout of the pages is attractive and convenient. On the right-hand pages, on the outside edge, is a black,



red, and gray half-inch bar. In the first half of the book the black section is labeled "Using the Command Prompt." Under this is the red section, divided into five sections: Getting Started, Managing Your Directory, Managing Your Files, Managing Your Floppy Disks, and Managing your Hard Disk. The appropriate section is highlighted in a white box as you thumb through the book. The second half of the book covers the MS-DOS User Shell, with the same subsections as the DOS portion.

At the top of the right-hand page are listed the specific commands covered in each subsection. Black print is normally used to list the commands, with the specific command covered on a the current page highlighted in red.

The left-hand pages list the specific command (or commands) covered on that and the next page in large red print. This gives you two methods to locate the command you want, by subject and by name. Naturally, there is both a table of contents and index to provide cross-reference assistance.

The print in *MaranGraphics' Simplified User Guide to MS-DOS 5.0* is much smaller than in *Easy DOS*, so some people may have difficulty reading. On the other hand, the diagrams are much more helpful and detailed. The DOS section is fifty-eight pages long, the *DOSSHELL* section is sixty-four (to include those operations only germane to the *DOSSHELL*, such as changing screen mode from text to graphics, changing colors, and so forth.

Commands covered are: CD, CLS, COPY, BACKUP, CHKDSK, DATE, DELETE, DIR, DISKCOPY, FORMAT, MD, MIRROR, MORE, PATH, PRINT, PROMPT, RD, RENAME, RESTORE, SORT, TIME, TREE, TYPE, UNDELETE, VER, VOL, and XCOPY, for a total of twenty-seven. The nicest part of the book is that it doesn't merely show you an example, it gives variations. For example, under Sort Files, it shows sorting a directory by name, extension, date, and size. Then, at the bottom of the second page, it lists the commands you need to sort in reverse order and pause every screen for name, extension, date, and size, with a second table listing the commands for doing these commands and sending the results to your printer.

The extensive use of both graphic diagrams and screen pictures goes a long way towards making the commands understandable. Having the command options not only men-

tioned but in many cases illustrated, makes it easier for the novice to make their computer work harder for them with less pain and effort.

### SUMMARY

For the MS-DOS terrified, *Easy DOS* is the best guide. Its explain-every-step approach eliminates potential problems that befall most novice MS-DOS users. While it isn't comprehensive, it covers all the important commands every MS-DOS beginner needs to know. Its large

## The diagrams are much more helpful and detailed.

format and print make it simple to use, and it is still small enough to pack in the carrying case of your 1100FD/HD. It's only detraction is that it is such a basic guide that much information on the commands included is not covered.

*MaranGraphics' Simplified User Guide for Microsoft MS-DOS 5.0* is the better choice if you are merely intimidated by MS-DOS and not terrified of it. While it isn't a foolproof step-by-step guide, it does provide all the information a beginner needs to accomplish common tasks, and covers more of them than *Easy*

### PRODUCT SPECIFICATIONS & SUPPLIERS

#### *maranGraphics' Simplified User Guide for Microsoft MS-DOS 5.0* — \$12.95

by Richard Maran, ISBN 0-9694290-4-5

8.5-inches by 11-inches, softbound, 126 pages. Table of contents, index included.

maranGraphics Inc.  
5755 Coopers Avenue  
Mississauga, Ontario  
Canada L4Z 1R9  
(416) 890-3300

#### *Easy DOS* — \$19.95

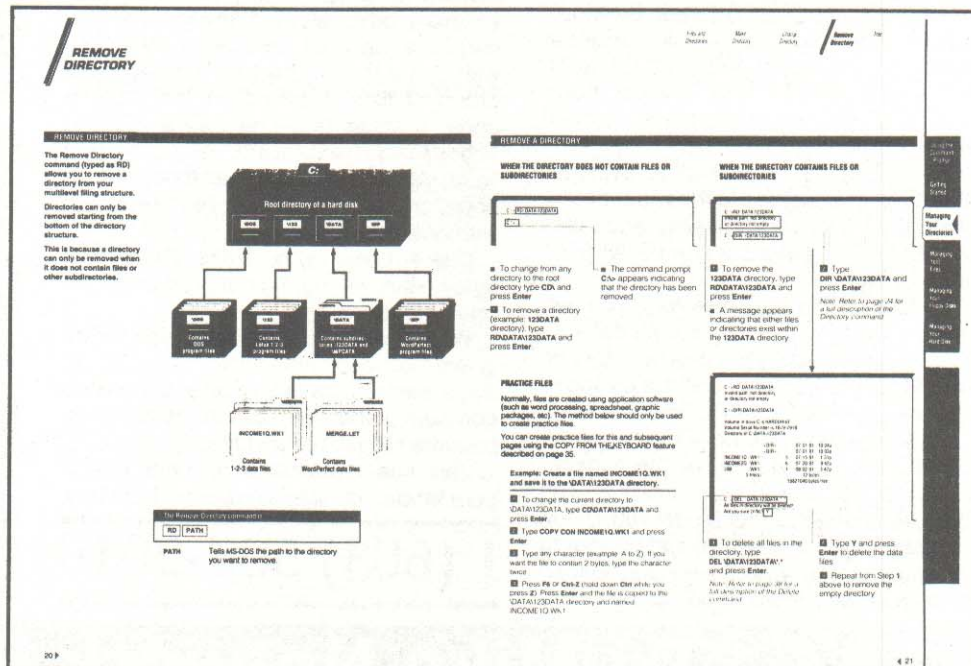
by Shelley O'Hara, ISBN 1-88022-854-7

8-inches by 10-inches tall, softbound, 198 pages. Table of contents, index, reference section included.

QUE

117711 N. College Ave., Suite 140  
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*DOS*, with far more variations. With the book split almost exactly in half between the direct MS-DOS commands and the MS-DOS User Shell, you won't need another book when you have to move between the two systems.





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When we designed Disk+ we did it out of necessity. We wanted a way that we could just connect a Model 100 to our desktop computer with a cable and save files onto the desktop's disk drive. We wanted it to be so simple to use it would be self-explanatory.

Picture this. Disk+ comes to you on a Snap-in ROM and a diskette for your desktop. You take a quarter and open the little compartment on the back of your Model 100. Then you just press the ROM into the socket. Disk+ appears on your main menu just like a built-in.

You connect your Model 100 to your other computer using an RS232 cable (available from TMNE for only \$20).

You just place the Disk+ diskette into the desktop's drive and turn on the computer. It powers up automatically and says "awaiting command" on your desktop's screen. Then you just put the widebar cursor on the Model 100 main menu on Disk+ and press ENTER. You are shown your RAM files arranged just like the main menu.

To save a file to your other system's disk drive, you just move the widebar cursor to the file you want to save and press ENTER. It is saved instantly with no further action.

To look at the disk directory, you just press a function key on your Model 100. You see immediately the disk directory on your Model 100 screen, and it is arranged just like your Model 100's main menu.

To load a file from the diskette to your Model 100, you just move the widebar cursor to the file and press ENTER. The file is transferred to your Model 100's RAM instantly. You can press F8 and go back to the main menu, and the file you loaded from diskette is there, ready to use.

It is so nice to be able to keep your documents, programs (both BASIC and machine code) and Lucid spreadsheet files on the diskette, and bring them back when you need them. All files are ready to run or use with no changes or protocol by you.

**If you have access to a desktop computer and don't have Disk+, then evidently we have done a poor job telling you about it.**

All files and programs that you load or save, go over and come back exactly as they are supposed to be because of full error checking. This guaranteed integrity is really a comfort. Disk+ is wonderful in so many other ways. For example, you can do a "save all" of all your RAM files with just a touch of a function key. That group of files is saved on the diskette under a single filename with a .SD (for subdirectory) extension. Any time you want, you can bring back all those files at once, or just one or two if you like, again with one-button ease.

Disk+ takes up no RAM. That's zero bytes either for storing the program or for operating overhead.

What really excites most Disk+ users is text file cross compatibility. Your Model 100's text files are usable on your desktop computer, and your desktop's text files become Model 100 text files.

This means you can write something on your Model 100, and with Disk+ transfer it

instantly to your desktop and start using it right away on your bigger computer. Or the way we like to work is to type in a document on the desktop computer and then transfer it to our Model 100 with Disk+. Then we print out the document, beautifully formatted, using WRITE ROM.

Disk+ works with just about every micro sold, from IBM PC and its clones, to all Radio Shack computers (yes, all), to Apple II, Kaypro, Epson and most CPM. Just ask us. More than likely, your computer is supported.

Incidentally, hundreds of Model 100 owners have gone to their Radio Shack stores and bought a color computer because it is so low priced, and with Disk+ they have an inexpensive disk drive.

And if that weren't enough, how about this: Disk+ also provides cross-compatibility between different computers like IBM, Apple or the Model 4 using the Model 100 as the intermediary device. Quite a feature!

The snap-in ROM is really great because you can use other ROMs like Lucid or WRITE ROM. They snap in and out as easily as an Atari game cartridge and you never lose your files in RAM.

Anyone who ever uses Disk+ simply can't do without it. But so many times we have had new users call us and say, "Wow! I had no idea when I ordered it that Disk+ would be so fantastic. I just couldn't believe that I could use my desktop computer's disk drive with my Model 100 just like it is another main menu."

That's why we sell Disk+ on a thirty-day trial. If you aren't completely satisfied, return it within thirty days for a full refund. Priced at \$149.95 on Snap-in ROM. MasterCard, Visa or COD.

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COMPATIBILITY: Tandy Model 100, 102, and 200 (untested).

# CKREG.CA

## Creating a check register with Lucid.

by Algis Kaupas

*Editor's note: This article is derived from three files (SROM10.TIP, SROM11.TIP, and SROM12.TIP) originally posted on CompuServe's Model 100 Forum and reprinted here with the author's permission. For ease of entering the data into your computer, rather than typing it in, you can download the files from CompuServe or the Portable 100 BBS and paste in the necessary portions.*

—MN

**T**his article will step through the development of CKREG.CA, an application for the *Lucid* and *Lucid Database* programs that are part of *Super ROM*. They will describe a simple checkbook register, input and report templates for the register, reconciling with the bank statement, and methods of assigning the information in the register to account codes.

I hope they will begin to give you a feel for spreadsheets in general and *Lucid* in particular. I also hope they encourage you to develop your own applications, to experiment further with both *Lucid* and *Lucid Database*, and to try adapting approaches found in guides for other spreadsheets and other computers for use with *Lucid* and the Model 100.

We'll start with the design of the check register, and a method for printing it from within *Lucid*.

### MANUAL CHECK REGISTER

Figure 1 is an example of a manual checkbook register as it might look a few days into January of a new year. Information about each financial transaction is entered into the check register, and a running balance maintained by subtracting debits (checks and payments) from the previous balance, and adding credits (deposits) to it.

cells will perform the calculations done by us in the manual checkbook.

This version of CKREG.CA is designed to be printed from within the spreadsheet, so it is desirable to add a label and summary section at the top of the spreadsheet, as in Figure 3.

Data entries start at cell A8. Debit amounts are entered into column F, and credit amounts into column G.

[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]
X	REF NO	DATE	ACCT#	DESCRIPTION	DEBIT	CREDIT	BALANCE
				BALANCE FORWARD		[INPUT]	[FORMULA] [FORMULA] [FORMULA]

Figure 2. A format similar to the bank's statement can be used.

At the end of the month, items are checked to see if they have cleared the bank, and any additional credits/charges entered. The items recorded are checked against the bank's version of account activity, and a reconciliation made to verify the accuracy of the inputs and calculations.

### BASIC FORMAT OF CKREG.CA

A format similar to the checkbook example can be used for CKREG.CA (see Figure 2). Column [A], "X," will be used later for reconciliation, and column [D], "ACCT," for assigning transactions to account codes. Information is entered into the appropriate cells, and, when F2 (Calc) is pressed, the formulas placed in

Cell G8 is the cell for inputting the balance carried forward from the previous time period (or the starting balance, if CKREG.CA is being set up for the first time.)

Column H has the formula for finding the current balance. The general form of the formula is CURRENT BALANCE (current H cell) = PREVIOUS BALANCE (previous H cell) - DEBIT (F cell in this row) + CREDIT (G cell in this row). Setting up the formula this way allows the balance to be found whether the row item is a debit or a credit.

In cell H8, this is entered as +H7-F8+G8. This formula is then copied and pasted into as many cells down column H as you need:

1. Push F7 (Sel).
2. When the prompt *Range Cn:Cn* appears, press ENTER.
3. Press F5 (Copy). Wait will flash on the screen. When it disappears, the contents of the cell is in *Lucid's* paste buffer.
4. Move the cursor to the next cell down, and press PASTE.
5. Press F1 (Fmla) to select *Lucid's* paste buffer for pasting.
6. When the prompt *Range Cn:Cn*

X	REF NO	DATE	DESCRIPTION	DEBIT	CREDIT	BALANCE
			BALANCE FORWARD		1,000.00	1,000.00
101	1.01		Computer supplie	100.00		900.00
8601	1.02		Deposit-Inv. #8601		1,200.00	2,100.00
102	1.04		Rent	500.00		1,600.00
103	1.05		Office supplies	100.00		1,500.00
8602	1.07		Deposit-Inv. #8602		500.00	2,000.00
104	1.08		Telephone	100.00		1,900.00
105	1.09		Utilities	50.00		1,850.00

Figure 1. A standard paper check register, like the one banks use.



	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]
[01]	CKREG.CA	V.1.0:	[INPUT]			PREVIOUS BALANCE:		[+G8]
[02]						CREDITS:		[+SUM(G9:G249)]
[03]	LAST UPDATE		[INPUT]			DEBITS:		[+SUM(F9:F249)]
[04]	RECONCILIATION		[INPUT]			NEW BALANCE:		[+H1+H2-H3]
[05]	=====							
[06]	X	REF	DATE	ACCTDESCRIPTION	DEBIT	CREDIT		BALANCE
[07]								
[08]				BAL FORWARD		1,000.00		[+H7-F8+G8]
[09]		101	1.01	Comp supplies	100.00			[+H8-F9+G9]
[10]		8601	1.02	Deposit-#8601		1,200.00		[+H9-F10+G10]
[11]		102	1.04	Rent	500.00			[+H10-F11+G11]
[12]		103	1.05	Office suppl	100.00			[+H11-F12+G12]
[13]		8602	1.07	Deposit-#8602		500.00		[+H12-F13+G13]
[14]		104	1.08	Telephone	100.00			[+H13-F14+G14]
[15]		105	1.09	Utilities	50.00			[+H14-F15+G15]

Figure 3. Including a label and summary section is always a good idea.

appears, use the **BKSP** key to erase the second **Cn** and change it to the end of the range that you want the formula pasted into, and press **ENTER**.

- When **Wait** ceases to flash, the pasting is complete.

The formula being copied and pasted uses *relative cell references*. This means that the formula will be adjusted depending upon the cell that it's copied into. In cell H9, for example, the formula will become **+H8-F9+G9**; in cell H10, **+H9-F10+G10**; etc. (If the cell number is preceded by a "\$," it is an *absolute cell reference*, meaning that the cell number will stay the same, whatever cell it is pasted into.)

## LABELS AND SUMMARY SECTION

The top section of the spreadsheet is for information, labels and a summary of account activity. Cell D1 identifies the time period for the check register. Cell D3 is for the date of the last entry, and cell D4 for the date of reconciliation with the bank statement. The current date can be entered into either of the date cells by pressing **F1 (Edit)**, and then entering **CTRL-D**, made by pressing the **D** key while holding down the **CTRL** key.

The summary section in the upper right-hand corner of the spreadsheet also acts as a proof section. Cell H1, for the **PREVIOUS BALANCE**, has the formula **+G8** entered into it. Whatever value is placed in Cell G8 (the balance forward credit cell) will also appear in cell H1. Cell H2, **CREDITS**, has the formula **+SUM(G9:G249)**. This will total all the credits in column G *except* the starting balance in G8. Cell H3 has the formula **+SUM(F9:F249)**. This is the formula for totalling all the entered debits.

Cell G4 has the formula **+H1+H2-H3**, which is **PREVIOUS BALANCE + TOTAL**

**CREDITS** (excluding the starting balance) - **TOTAL DEBITS**. This should equal the current balance in the last cell of column H.

## PRINTING

When printing directly from a *Lucid* .CA spreadsheet (i.e., not using a report template), characters will be printed only if they are "uncovered." A 17-character entry, for example, in a column that has the *Lucid* default width of nine characters will only print out the first nine characters if there is an entry in the cell to the right of it. If that cell is blank, the full 17 characters would be printed out. Scanning through the spreadsheet with the cursor allows one to view what will be printed out.

(When using the report templates, the printing width of a cell is determined by the width of the cell reference, and the spreadsheet can be left with its default width of nine for all cells. This will be described more fully later.)

In any case, it's useful to format the column widths before printing when printing directly from the spreadsheet. The column width is set by following this procedure:

- Place cursor over a cell in the column whose width is being set.
- Push **F7 (Sel)**.
- At prompt **Range Cn:Cn**, press **ENTER**.
- Press **F2 (Width)**.
- At prompt **Width?**, type in the number of spaces and press

column	label	typical entry	spaces
A	X	X	3
B	REF	8601	6
C	DATE	12.12	7
D	ACCT	5	6
E	DESCRIPTION	BALANCE FORWARD	20
F	DEBIT	10,000.00	11
G	CREDIT	10,000.00	11
H	BALANCE	10,000.00	11
TOTAL NUMBER OF SPACES .....			75

Figure 4. One method of formatting that leaves space for punching holes for binding and storage.

**ENTER**.

- The column will change to the number of spaces desired.

Figure 4 shows one way of formatting the column widths, resulting in a total of 75 spaces, which allows printing in either standard type (10 characters per inch, 80 characters per line) with total left and right margins of 5 spaces on 8.5 X 11 paper; or in elite type (12 cpi, 96 characters per line) with total margins of 21 spaces, sufficient for hole punching and putting in a binder.

Here's the procedure for printing from the spreadsheet (see also pp. 44-48 of the *Lucid* manual):

- Set up your printer for the type size you want. (This may require going into **BASIC** to enter the control codes—*Lucid*, unlike *Write*, doesn't support global printer setup codes).
- Go into your **CKREG.CA** spreadsheet, and go to the upper left corner using **CTRL-up arrow** or **CTRL-W**.
- Hit the **PRINT** function key.
- Hit **F4 (Page)** to format the printout, as detailed in the *Lucid* manual on pp. 44-48.
- Hit **F2 (Rnge)**. To print the whole spreadsheet, press the period (.) key to "lock" the range, and then hit **CTRL-down arrow**. A portion of the spreadsheet can also be printed out.
- Hit **F1 (Go)**.

Figure 5 shows how the above example would be printed out using the column widths in the above example.

## CREATING CKREG.CA

**CKREG.DO** (Listing 1) is an ASCII hex file that can be converted to *Lucid*'s .CA format by using the utility program **CHANGE.BA** (available on CompuServe's Model 100 Forum, the *Portable 100 BBS*, and Club 100). It is a formatted, blank template for **CKREG.CA** as described above. Please note that cells other than input and data entry cells have been protected—to unprotect them, see your *Lucid* manual. The balance formulas have been carried down to H29.

For instructions on using **CHANGE.BA** to convert the hex file to a .CA file, see the sidebar on page 20.

## COPYING THE TEMPLATE

Now, having created the **CKREG.CA** template, and before using it, I suggest saving a blank copy of it as **MSTRCK** or some such name.

## THE EASY WAY:

- DO NOT KILL THE HEX FILE** in step



X	REF	DATE	ACCT DESCRIPTION	DEBIT	CREDIT	BALANCE
			BAL FORWARD		1,000.00	1,000.00
	101	1.01	Comp supplies	100.00		900.00
	8601	1.02	Deposit-#8601		1,200.00	2,100.00
	102	1.04	Rent	500.00		1,600.00
	103	1.05	Office suppl	100.00		1,500.00
	8602	1.07	Deposit-#8602		500.00	2,000.00
	104	1.08	Telephone	100.00		1,900.00
	105	1.09	Utilities	50.00		1,850.00

Figure 5. The resulting printout from the format in figure 4.

# 8 below when converting from hex to .CA format.

2. REPEAT the conversion process, using *MSTRCK* as the .CO output file name.

## THE LUCID WAY OF COPYING TEMPLATES

Here's how saving a template is done in *Lucid*:

1. Enter the blank .CA template to be saved.
2. Go to the upper right hand corner of the spreadsheet.
3. Push F7 (*Select*).
4. When the *Range A1:A1* prompt

appears, push the period (.) key. This locks the range. Push the *CTRL-down arrow* keys. Push *ENTER*.

5. Push F5 (*Copy*).
6. When the *Wait* prompt quits flashing, the FORMULAS and ENTRIES are in *Lucid's* paste buffer.
7. Push F8 (*Exit*).
8. From the Model 100 main menu, which is where you'll end up, put the cursor over *Super* and press ENTER.
9. From the *Super ROM* menu, which is where you'll end up,

```

CKREG (V.1.0) FOR: [D1] ]
Last Update: [D3] ]
Last month's end balance:[H1] ]
Credits to Date:(FORMULA)[H2] ]
Debits to Date:(FORMULA)[H3] ]
New balance: (FORMULA)[H4] ]
PRESS F5 FOR ENTRY SCREEN/
INPUT FOR CKREG.CA(V.1.0): rec#:[# ]
Ref.no.:[b# ]
Date: [c# ]
Descrip:[e# ]
Debit:$[f# ] Credit:$[g# ]
Acct#:[d# ]
PRESS F5 FOR ACCT INFO/

```

Figure 6. CKREG.DO, input template for CKREG.CA.

push  $F1 = \text{Lucid}$ .

10. At the prompt *Lucid file?*, type in *MSTRCK*, and push *ENTER*.
11. Push the *PASTE* function key.
12. Push the *F1 (Fmla)* key, and when the range prompt appears, *ENTER*.
13. The *FORMULAS* and *ENTRIES* will now be pasted into the new *MSTRCK* spreadsheet.
14. Format the column widths as described earlier.
15. Format the display format of any cells or columns that you want formatted.

[illegible]

*Listing 1. This hexadecimal file will create the .CA file needed for the check register program.*



## Instructions for Converting CKREG.DO Hex File to .CA Format with CHANGE.BA

With the help of the program *CHANGE.BA*, you can convert listing one into a .CA directly readable by *Lucid*. You can either download *CHANGE.BA* from the CompuServe Model 100 SIG, GENis's Laptop Roundtable, or the *Portable 100* BBS.

On the *Portable 100* BBS, after you call in and give your name, address, and make up a password, you see the main menu. At the main menu, select the Files area. At the next menu, select option four, the Model 100/102/200 files area. The next menu asks for the name of the file to download, type *CHANGE.BA*. Before you press *ENTER*, though, tell your Model T that you are going to *DOWNLOAD* the file, and call it *CHANGE*. After the Model T is prepared, press *ENTER*. If this is your first time, the BBS will request the type of file transfer. For the Model T, select ASCII. When you press *ENTER*, the BBS will immediately begin sending the file. You will need 5,760 bytes free for the file.

After downloading *CHANGE.BA*, download the documentation, called *CHANGE.DOC* on the BBS. This file will require 9,472 free bytes. Call it

*CHANG.DOC* (don't use the exact same name for both files when you download them, otherwise you overwrite one of them with the other).

Now exit the BBS by selecting the <P>revious Menu or <G>oodbye option. After hanging up, go into *BASIC* and load the *CHANGE.DO* file and the Model T will convert it to an executable .BA file. Now type *RUN*.

The first desired line of the hex file is (note, there is a leading space): 61566 62959 0

The last desired line is (note leading space): 186569

1. As a precaution, save the hex file to tape or disk, and backup whatever RAM files you don't want to lose.
2. Run *CHANGE.BA* from the main menu. You'll see a menu of the files in RAM, and labels above the cursor keys.
3. Using the arrow keys, put cursor over *CKREG.DO*.
4. Press *F2*, which is labeled >BIN. This will change the hex file to binary (machine language) format.

5. The following prompt will appear on your screen: .CO output file:

6. Type in *CKREG* as the name you want the file to have. Press *ENTER*.

7. The screen will change to: .CO output file: *CKREG*, and *Working...*

8. After about two minutes, your M100 will beep, and you'll be prompted *Kill hex input file (Y/N)?* Since you already have the hex file on tape or disk, answer Y to save memory.

9. Put the cursor over the *CKREG.CO* file name and press *F3*, labeled >CA, to change the .CO file to a .CA file usable by *Lucid*.

10. The new name will instantly appear inside the widebar cursor. If *Super* is already on the menu, with the cursor still over *CKREG.CA* and press *ENTER*.

11. If *Super* is not on the main menu, use *F8* to exit to the main menu and access *Super* and then *Lucid* in the usual way (type *CALL 63012* and press *ENTER* in *BASIC*, hit *F1* to get into *Lucid*). When you see the prompt *Lucid file?*, type in *CKREG*, press *ENTER*, and you're there!

16. Prior to printing, format the *Lucid* print options as described in the *Lucid* manual.

If that seems like a lot of steps, you're right, it is. Console yourself with the fact that using the input and report templates, which I'll describe later, allows you to skip some of these steps, at the cost of having a couple of .DO files in memory.

And console yourself with the fact that *Lucid* on the Model 100 is a handy way of dealing with small files on a portable computer, that you're learning about spreadsheets, and that you'll have a hands-on knowledge of what you do and don't like in spreadsheets when you start considering *Lotus 1-2-3*, *VP Planner*, *SuperCalc*, *Appleworks*, *Microsoft Works*, *Excel*, *Lucid 3-D*, and the other spreadsheets available for desktop computers.

### MAKE IT EASY ON YOURSELF

The *CKREG.CA* spreadsheet is essentially done. And by now, if you've been playing around with it, you realize what a pain it is to put things directly into the spreadsheet—the Model 100 screen is simply too small.

However, *Lucid Data* lets you create a "view" template to make data entry

much easier, and to establish a routine to give a statement balance that does not include transactions that are not on the bank statement. Using an input template helps this considerably.

Figure 6 is an input template for *CKREG.CA*. Type it into *TEXT* and save it as *CKREG.DO*. As always, make sure

**If that seems like a lot of steps, you're right, it is.**

that there are *CODE-0* (¶) markers at the end of view "paragraphs." They should be at the end of the following lines in this case:

```
PRESS F5 FOR ENTRY
SCREEN<CODE-0><ENTER>
PRESS F5 FOR ACCT INFO<CODE-
0><ENTER>
```

The *Super* ROM manual goes into an

explanation of view input templates several times. The best descriptions are found on pages D7-1 to D8-14.

One thing to note is that all spreadsheet inputs using the view templates are considered text labels *unless* the corresponding columns are formatted to be numerical entries as described in the manual. (I find myself formatting in cell 250 of a column, but also defining the range for formatting as, for example, F1:F250 for the debit column. I suggest you do the same.) Please note also that the view file input name is *CKREG.DO*.

Because of the label and summary sections at the top of the spreadsheet, entries into the *CKREG.DO* template don't begin until record #8, which is *BALANCE FORWARD*, and other entries begin at record #9. It's not the most aesthetic arrangement, but it's compensated for by the simplicity of printing directly from the spreadsheet, as opposed to using report templates.

Keep in mind also that the summary section in the view template won't be current until you enter *Lucid* and press *F2* (*Calc*).

Have fun with it, and stay tuned for more information about *Lucid* ...





COMPATIBILITY: Models 100/102/200.

# CONTAB.BA, Part One

*Temperature conversions with your M-100.*

*by R. Jim Siebert*

**C**onversion tables, or *CONTAB*, is a program that just grew. You probably know that song. If you have done any programming at all, you can probably even sing the second verse. Don't most programs just grow, and grow? Is any program ever finished? Are programs like some fish, that grow (depending on the food supply) right up until they die?

Anyway, we were working outside the US, and we needed a new medical thermometer. The problem was that the only ones available were calibrated in Celsius, but friend wife was calibrated in Fahrenheit. I suppose that I could have continued to calculate and translate every new need, but the nearby computer seemed a better solution.

**The program should be  
adaptable to any  
machine using BASIC.**

Some of the features of this program are designed to make the program quick and easy to use, and can be adapted to building other programs. Two features of note are: 1) The efficient blending of Number keys and Function keys for use in a Menu (to be covered next month), and 2) Quick entry of numerical data and letter identifiers without use of an <ENTER> keystroke.

This latter is also of interest to machines other than the models 100/102/200. Lines three thru seven are the ones that do the accumulating. The program should be adaptable to any machine using BASIC. Another feature of some interest, is the simple plan of converting each new entry to a base value and then converting it to the desired value when requested. This saves many lines of calculating. It resembles the hub system used by the airlines to sort out baggage and passengers on a

```

1 'CONTAB conversion tables RJS 2/88:'
  O$=Formula identifier, O=numerical input
2 U$="####.##":GOTO9
3 O=VAL(LEFT$(A$,LEN(A$)-1)):' isolates & evaluates the numerical part of the input$
4 O$=RIGHT$(A$,1):RETURN:' picks off the letter used to select the proper conversion formula
5 Q$=INKEY$:IF Q$>CHR$(42)ANDQ$<CHR$(58)ORQ$>CHR$(64)ANDQ$<CHR$(91)ORQ$>CHR$(96)ANDQ$<CHR$(123)THENA$=A$+Q$:PRINTQ$;
6 IFQ$>CHR$(57)THENGOSUB3:RETURN:' L5 restricts input to letters & characters - and accumulates the numbers until a letter is input then drops thru to L6 where it is sent to SubL3 for evaluation.
7 GOTO5:' Prevents a crash in case something other than a number or letter is input - resets
9 CLS
15 PRINT"          Temperature Converter RJS ":PRINT
17 LINE(20,0)-(220,7),1,B
100 PRINT:PRINT" Enter temperature followed by f,c,r,k (f)ahrenheit, (c)elsius, (r)ankin, (k)elvin":GOSUB5
110 PRINT:PRINT" to be changed into (f,c,r,k)?"
111 C$=INKEY$:IFC$=""THEN111
113 CLS:PRINT
115 IFO$="f"THENO=(O-32)*5/9
117 IFO$="c"THENO=O:' the reference
119 IFO$="k"THENO=O-273.16
121 IFO$="r"THENO=(O-459.69-32)*5/9
155 IFC$="f"THENPRINTA$;" = ";USINGU$;O*9/5+32;:PRINT" degrees Fahrenheit"
157 IFC$="c"THENPRINTA$;" = ";USINGU$;O;:PRINT" degrees Celsius"
159 IFC$="k"THENPRINTA$;" = ";USINGU$;O+273.16;:PRINT" degrees Kelvin"
161 IFC$="r"THENPRINTA$;" = ";USINGU$;O*9/5+32+459.69;:PRINT" degrees Rankin"
199 Q$="":A$="":GOTO100
  
```

*End of listing.*

Listing 1. CTAB1.BA, for converting between Fahrenheit and Celsius temperatures.



# APPLICATION

nationwide basis. (I hope it does not send you to Miami and your luggage to Chicago.)

Naturally, you can customize this program. Start with line 15 and put in your own initials or short name. If your name is too long, you may have to stretch the box as in line 17. Key in everything up thru line 100 and run it over and over until you get this part the way you want. All the parts following the apostrophe (') in any line can be left out to save memory space. The apostrophe (') (called *REM*) is a reminder to the human reader, but means absolutely nothing to the machine reader. Any time the *BASIC* sees a *REM*, it ignores everything after it on that line. This is a useful tool sometimes to lock out a line that you think is causing trouble, but you don't want to erase it lest you have to type it in later. Just put a *REM* or an apostrophe (either will work) at the first of the line immediately after the line number, and the *BASIC* will ignore that line — but you still have it in the right place when you want to try it again.

Let's give special attention to lines three thru seven. They are the ones that do the accumulating of the numerical input and also the selection letter. Somewhere in your computer operating manual, usually toward the back, you will find a chart of ASCII values. Study it for a bit, then look at line 5. Be careful that you use the chart designed for your computer because the chart for

## Put a *REM* or an apostrophe immediately after the line number, and *BASIC* will ignore that line

your printer may be slightly different. This is one of the reasons that different printers do not always print the same text out in exactly the same fashion. Fortunately they all use the same letter and number codes, but the tab and other special formatting functions are up for grabs.

Line 5 is instructed to act immediately on a single keystroke input and to call it *Q\$*. If the ASCII value of *Q\$* is above 42, but below 58, (a number or a plus or a minus or a decimal point), or if it is above 64, but below 91, (an upper case alphabetic input), or if it is above 96, but below 123, (a lower case alphabetic input) then that input character is to be printed on the screen. If the input is a letter, Line 6 tells it to go to line 3. But, if it fails the test of the first part of line 6, in other words, if it is a number, it will not act on the last part of line 6. It will "fall thru" to line 7 which tells it to go back to line 5 and wait for another single character input which it can append to the ones that came before. This way it collects the pieces to the number you want to convert. It will accept the decimal point too, but when it gets a letter, either upper case or lower case, it goes to line 3. There it converts all but the last one of the accumulated input characters into a single value which it calls "O". Line 4 takes off the last entered character and calls it *O\$*, which then becomes the selector. This sounds somewhat complicated, but it works so slickly that it is

```

2  U$="####.##":D$="###.####":GOTO9
3  O=VAL(LEFT$(A$,LEN(A$)-1))
4  O$=RIGHT$(A$,1):RETURN
5  Q$=INKEY$:C$=A$:IF Q$>CHR$(42)ANDQ$<CHR$(58)ORQ$>CHR$(64)ANDQ$<CHR$(91)ORQ$>CHR$(96)ANDQ$<CHR$(123)THEN A$=A$+Q$:PRINTQ$;:IFQ$=CHR$(44)THEN A$=C$
6  IFQ$>CHR$(57)THENGOSUB3:RETURN
7  GOTO5
9  CLS
15 PRINT"           Measurement Converter  R
JS ":PRINT
17 LINE(20,0)-(220,7),1,B
200 PRINT:PRINT" Enter length then (i)nc
h,(f)oot,(y)ard,mil(e),(m)m,(c)m,(M)ete
r,(K)m,(k)not,fre(q)uency":GOSUB5
210 PRINT" to be changed into(i,f,y,m,c,
M,k,K,q)?
211 C$=INKEY$:IFC$=""THEN211
213 CLS:PRINT
215 IFO$="i"THENO=O*2.54
217 IFO$="f"THENO=O*12*2.54
219 IFO$="y"THENO=O*36*2.54
221 IFO$="e"THENO=O*12*5280*2.54
223 IFO$="m"THENO=O/10
225 IFO$="c"THENO=O
227 IFO$="M"THENO=O*100
229 IFO$="K"THENO=O*100000
231 IFO$="k"THENO=O*12*2.54*6076.11549
233 IFO$="q"THENO=30000000000/O
255 IFC$="i"THENPRINTA$;" = ";USINGU$;O/
2.54;:PRINT" inches"
257 IFC$="f"THENPRINTA$;" = ";USINGU$;O/
(2.54*12);:PRINT" feet"
259 IFC$="y"THENPRINTA$;" = ";USINGU$;O/
(2.54*36);:PRINT" yards"
261 IFC$="e"THENPRINTA$;" = ";USINGD$;O/
(2.54*12*5280);:PRINT" miles"
263 IFC$="m"THENPRINTA$;" = ";USINGU$;O*
10;:PRINT" millimeters"
265 IFC$="c"THENPRINTA$;" = ";USINGU$;O;
:PRINT" centimeters"
267 IFC$="M"THENPRINTA$;" = ";USINGU$;O/
100;:PRINT" Meters"
269 IFC$="K"THENPRINTA$;" = ";USINGD$;O/
100000;:PRINT" Kilometers"
271 IFC$="k"THENPRINTA$;" = ";USINGD$;O/
(2.54*12*6076.11549);:PRINT" knots"
273 IFC$="q"THENPRINTA$;" = ";USINGU$;30
00000000/O;:PRINT" Cycles/sec"
299 Q$="" :A$="" :PRINT:GOTO200

```

Listing 2. CT2.BA converts linear measurements between the English system and metric.

well worth the effort to understand it.

I use *O* and *O\$* as holding variables because it is so easy to confuse the letter *O* with the value zero that I don't dare use it for an important variable. The same is true for *Q*, *I* and *L*. You may have noted that some programmers use *Q* for the variable whenever a "queue" is needed, and *I* for a counter such as "item". It's a good practice since it uses up these easily confused letters on important, but routine chores. Still, once in awhile, you (*I*) will make a mistake and spend a frustrating time over an *O*/*Q* or an *I*/*L* mixup.

Line 117, you will note does nearly nothing. That is the value being used as the "hub". That variable "*O*" is the base to which all inputs are converted, and from which all outputs are calculated.

There are more efficient ways of setting up the table of conversions than the one listed, but there comes a point where



## APPLICATION

the memory space saved is at too great a cost to the ease of telling where the program is going. The program as listed can easily be modified to handle any measurement one works with. It could be used to convert frequency to wavelength or to antenna length. It could be used to figure gear ratios and surface speeds on a machine cutter. It handles cookie recipies, or currency rates of conversion. It can be used for almost any thing, and it is easy to modify the program to do it.

Two versions are printed here. The first, *CTAB1.BA* (1,237 Bytes) does temperature conversions using both the Farenheit scale as used in the United States and the Celsius (or Centegrade) scale as used in all the rest of the world. The Kelvin scale is used by scientists for expansion calculations and is based on the Celsius degree. Lines 119 and 159 show this relationship. The Rankin scale is not much used anymore, but it had been used by American engineers much the same as the Kelvin scale and is based on the Farenheit degree. Lines 121 and 156 show this relationship.

The second *CT2.BA* is a linear measurement converter. You can add to it anything you can look up in your old Physics book or engineering handbook. It is fairly compact. You will note that all the (') or *REM* statements have been left out to make it take

---

**There comes a point  
where the memory space  
saved is at too great a cost  
to the ease of telling where  
the program is going.**

---

up less memory space. It takes up 1,215 Bytes, which less than the smaller program that has all the *REM* statements in it. DON'T throw away all copies of programs that have *REM* statements in them. Sometime you will want to use one of those lines and you will have a difficult time figuring out where to begin and where to end. Those *REM* statements are very valuable. You'll save time if you use lots of them when you are making up a program on your own. Make TWO copies. Make one with the all the *REM* statements in and store it on disk and in print and then make the machine copy small for use. I'd be interested to hear how you put any of this to use.

Happy programming!

If someone you know just can't input numbers without using commas to set off the thousands, then fix line 5 such that it will print the comma, but ignore it for calculating purposes.

```
5 Q$=INKEY$:C$=A$:IFQ$>CHR$(42)ANDQ$<CHR$(58)ORQ$>CHR$(64)ANDQ$<CHR$(91)ORQ$>CHR$(96)ANDQ$<CHR$(123)THENAS=A$+Q$:PRINTQ$;:IFQ$=CHR$(44)THENAS=C$
```



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**COMPATIBILITY:** Model 100, 102, 200, Olivetti M10, Kyocera KC-85, NEC PC-8201/8300 (Untested).

## Now Is The Time. And Now. And Now. And ...

*Here are some tips on using the ON TIME\$ interrupt.*

*by Adrian Ryan*

**M**ulti-processing? On a Model 100? Far fetched? Perhaps not. I was investigating the interrupt facility in BASIC, because I had a need to have the computer perform a background task at scheduled intervals, and it seemed as if the *ON TIME\$* interrupt might be just what was required. As it turned out it was not exactly what I wanted, but it led me down a fascinating path.

Basically, (no pun intended!) what I needed was a way to get the machine to read an external sensor at a scheduled interval, record the sampled value and the time, and then continue. At first it seemed as if the *TIME\$* interrupt was purposely made for this, but certain operational drawbacks (bugs!) forced me to reconsider. It is fairly easy to get the computer to execute a subroutine at a designated time every day, and the following code will perform the same task every day at 12:34:56. (Program 1)

```
10 ON TIME$="12:34:56" GOSUB 1000:TIME$ ON
.
.
.
1000 'Your Interrupt Module
1010 RETURN
```

Suppose, however, that you want the interrupt to occur every ten seconds. Well, this code will do it: (Program 2)

```
10 ON TIME$="00:00:10" GOSUB 1000:TIME$ ON
.
.
.
1000 'Your Interrupt Module
1010 TIME$ = "00:00:00": Reset The Time
1020 RETURN
```

The snag is, you lose the normal use of the real time clock. I wanted to have the program perform its tasks at the scheduled intervals, *and* keep track of the date and time!

At this point, it is interesting to observe one of the peculiarities of the interpreter. It seems that the syntax of the *ON TIME\$* statement is very picky. Suppose that line 10 above appeared like this: (Program 3)

```
10 ON TIME$ = "00:00:10" GOSUB 1000
```

A syntax error message (?SN) would be provoked. There must be no spaces between the verb *TIME\$* and the qualifier symbol =. A space between the = symbol and the string expression is permissible, however. A check of the BASIC tokenizer and its table reveals that the reserved word is *TIME\$*.

There is, however, a way to have your cake and eat it too. BASIC places the next scheduled interrupt time in a 6-byte buffer in reserved RAM. With the *TIME\$* interrupt enabled, a check is performed at the end of each statement execution to see

```
10 ON TIME$=TIME$ GOSUB 1000
20 CLS
30 INPUT"Enter Frequency, Seconds:";R
40 IF (R > 59) OR (R < 2) THEN BEEP:GOTO
20
50 CLS
60 GOSUB 1000:'Update time value and enable interrupt.
70 PRINT@45,"Current Time ";TIME$
80 K$ = INKEY$:IF (K$ = "") THEN 70
90 TIME$ OFF
100 CLS
110 END
999 'Interrupt Routine
1000 TIME$ OFF:'Disable Interrupts During Handler
1010 BEEP
1020 T$ = TIME$
1030 H = VAL(MID$(T$,1,2))
1040 M = VAL(MID$(T$,4,2))
1050 S = VAL(MID$(T$,7,2))
1060 S = S + R:C = 0
1070 IF (S > 59) THEN 1080 ELSE 1090
1080 S = S - 60:C = 1
1090 M = M + C:C = 0
1100 IF (M > 59) THEN 1110 ELSE 1120
1110 M = M - 60:C = 1
1120 H = H + C
1130 IF (H > 23) THEN H = H - 24
1140 AD = 63805:' Use 63808 for an OLIVE TTI M-10
1150 X = S:GOSUB 2000
1160 X = M:GOSUB 2000
1170 X = H:GOSUB 2000
1180 GOSUB 3000
1190 PRINT@80,"Next Interrupt at ";H$;"
";M$;" ";S$
1200 TIME$ ON:'Enable Interrupts
1210 RETURN
1999 'Update Next Time
2000 XH% = X / 10
```

Listing 1. This program demonstrates how to implement repeating interrupts at user-specified intervals while maintaining full use of the real time clock. End the program by pressing any key.



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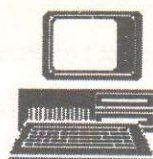
```

2010 XL% = X - (10 * XH%)
2020 POKE AD,XL%
2030 AD = AD + 1
2040 POKE AD,XH%
2050 AD = AD + 1
2060 RETURN
2999 'Build Time String For Display
3000 Z = H:GOSUB 4000:H$ = Z$
3010 Z = M:GOSUB 4000:M$ = Z$
3020 Z = S:GOSUB 4000:S$ = Z$
3030 RETURN
3999 'Make 2-Digit String
4000 Z$ = STR$(Z)
4010 IF (Z < 10) THEN Z$ = "0" + RIGHT$(Z$,1)
4020 Z$ = RIGHT$(Z$,2)
4030 RETURN
    
```

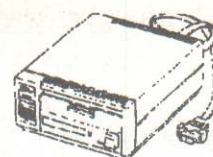
End of listing.

Address dec/hex	Contents	Example Time 12:34:56
63805/F93D	seconds (units)	6
63806/F93E	seconds (tens)	5
63807/F93F	minutes (units)	4
63808/F940	minutes (tens)	3
63809/F941	hours (units)	2
63810/F942	hours (tens)	1

Table 1. The Model 100 stores the next interrupt time in a buffer at 63805 (F93D hex). Example column shows values stored for time 12:34:56.



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if the real time clock value is equal to the buffer contents; if this is so, then the interrupt routine is executed. For the Model 100 the buffer is located at \$F93D/63805. The format of the data in the buffer is shown in Table 1, along with an example of how the time 12:34:56 would appear in the buffer. (For the Olivetti M10 this buffer is at \$F940/63808.)

In addition, BASIC has a flag at \$F947/63815 to indicate the current state of the interrupt. This location contains a 0 if the interrupt is currently disabled, a 1 if it is enabled, and a 3 if it has been suspended with a *TIME\$ STOP* command. (The equivalent flag for the Olivetti M10 is at \$F94A/63818.)

All that remains then is to update this buffer. Provided that the buffer contents represent a time in advance of the current time, then the interrupt will be re-scheduled. The program in Listing 1 is a demonstration of this principle.

The main loop is simply lines 70 and 80, which display the current time. The interrupt routine in subroutine 1000 takes the current time, adds the increment value in seconds from variable R, updates the *TIME\$* buffer, displays the next occurrence, and returns. Note that in line 40 the value of R is checked. While in principle it is perfectly possible to have an increment as large as you like, it is not possible to have even this program execute in much less than two seconds. If you alter line 40 to permit an increment of one second, you will find that the program will just about be able to keep up for a few seconds, and then will fail. BASIC is simply too slow to perform all the necessary operations in the allotted time.

In my case, this was no problem since all BASIC had to do in the interrupt routine was to call a machine language program to perform all the necessary operations. That however, was a whole new piece of fun, and is another story!



**COMPATIBILITY:** MS-DOS hard drive equipped computers..

## FileRunner: Tracking the Elusive Files

*If you use more than one PC, this is the easy way to keep the latest versions of all your files on your PCs.*

*By Terry Kepner*

**T**he quickest way to strike terror in the hearts of the office staff is to ask, "Is this the latest version of this file?" A mad scramble ensues as everyone checks their computer to see who last edited that file. "I rearranged the opening paragraph last Wednesday," says Bob. "I put in the author's corrections on Monday," says Mary. A pause as we examine our respective computers. "Hmmm," I say, "my copy is dated the previous Tuesday when I updated the manufacturer's address information."

Sure enough, all our copies are different.

Similarly, when I transport files from my home computer to my office computer, I always have to check to make sure that the copy I have on disk has the latest changes. Several times I've accidentally copied what I thought was the latest version over newly revised text.

### NEVERMORE

When MBS Technologies dropped by our office and demonstrated *FileRunner*, I was immediately captivated. Here was the solution to our problems.

*FileRunner* automatically tracks your files when you transport them, and makes sure that only the latest copy of a file is maintained. And, in the event that changes are made to two copies, it warns you of those differences so you do not accidentally overwrite a file with important changes.

### THE CONCEPT

*FileRunner*, like most important ideas, is fairly simple in concept: Always keep the latest version of a file on disk. The

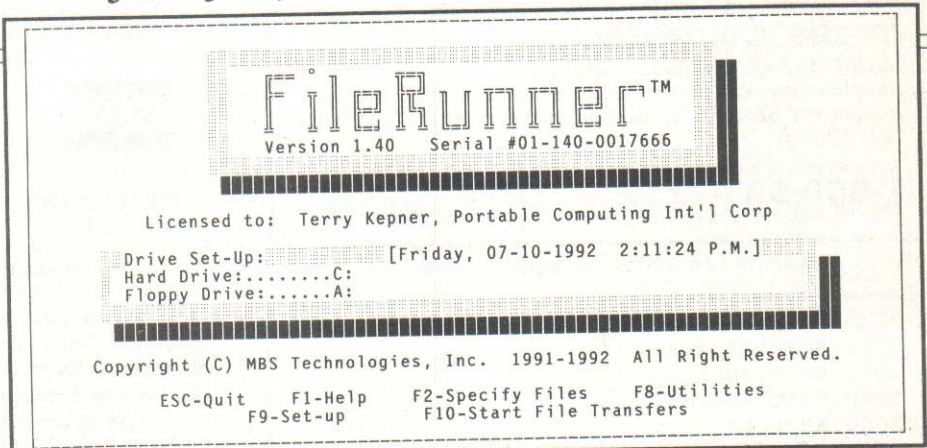


Figure 1. The opening screen of *FileRunner* is clean and simple, and lists the drive set-up directory specifications, if any.

execution, though, is not so simple, as anyone who has tried to do that can testify. Is the file on computer at the office the latest? Or wasn't the last

**I put twenty-four files, totaling over 1,697,658 bytes, on one 720KB disk.**

change made on the file on computer at home? I thought I transferred that copy to my transport disk, but maybe I didn't. Plus, which computer has the correct time? Did I remember to update all three

computers to Daylight Savings?

Inevitably, multiple copies with different changes come into existence.

MBS Technologies, with *FileRunner*, has conquered this problem, reducing it to only a few (two!) keystrokes. *FileRunner* takes responsibility for comparing dates, times, and file sizes, and keeping the latest version of the file on the transport disk. All you have to do is to run *FileRunner* and type those two keystrokes at the end of each typing session.

*FileRunner* even compresses the files for transport, making it possible to move much larger (or many more) files on disks than previously possible. In fact, I have moved twenty-four files totaling over 1,697,658 bytes to a 3.5-inch 720KB disk, with over 100K of free space left over!

### INSTALLATION

To install the program, type *INSTALL*. The program prepares a subdirectory called *RUNNER* (which you can



## SOFTWARE REVIEW

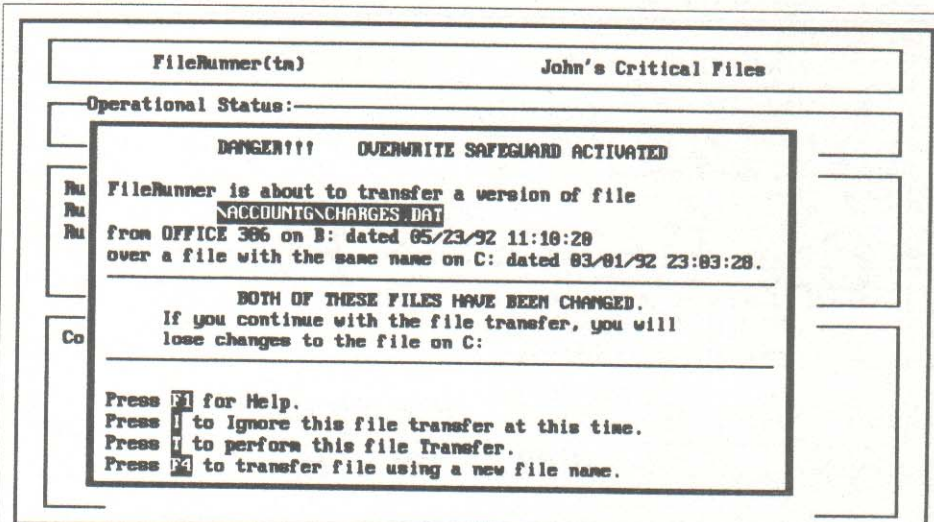


Figure 2. Overwrite protection is built-in, and helps prevent accidentally losing information when copying files where both versions have changes.

change) and copies all the relevant files. It requests the name you want to use to identify this particular computer. You have space for up to twelve characters in this description.

The program next asks you for the correct date and time. This information helps the program differentiate between copies of files that are only moments apart in edits and changes (such as in a busy office). It also asks for your Time Zone and if you follow Daylight Savings Time. This information allows the program to correctly transfer files between computers that might be in different states and time zones.

This timing is critical to the success of the program, because all MS-DOS clocks lose time. Some machines lose only a few seconds per week, others lose a minute per day. It doesn't take long to mount up to a big drift. *FileRunner* tracks this and periodically requests that you reset your clock to the correct time.

And that's all there is to installation.

### HOW TO USE IT

*FileRunner* works by making your two (or more) computers work in lock-step. Every time you update a file, run *FileRunner*. It looks at the files you have specified and compares them to the files on your transport disk. Updated files are automatically shipped over to the disk. If *FileRunner* detects any new files created since the last time you ran the program, it queries if you want them moved over.

When you insert the disk in the other computer, run *FileRunner*. It will compare the files on that computer with the transport disk. If none of the files on the other computer have been changed since the last time the transport disk was used in that computer, *FileRunner* automati-

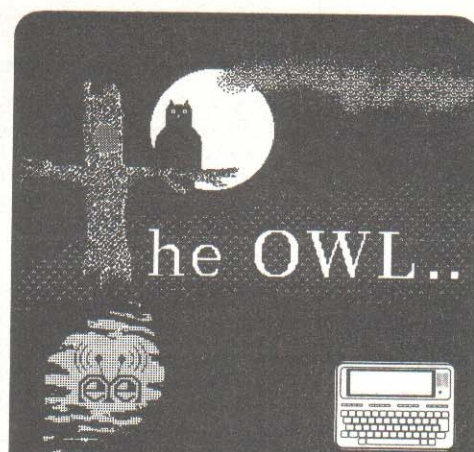
cally moves the updated files over to it. New files on the transport disk are moved only after you give permission.

If the program discovers that the files on the other computer have also been updated, it gives you a warning that you are about to overwrite an altered file and will lose the changes. If you don't mind losing those changes, tell the program to overwrite the program on the computer. Alternatively, you can rename the trans-

**This timing is critical to the success of the program, because all MS-DOS clocks lose time.**

ported file to a new name, preserving both files, or simply ignore this file transfer and go to the next file.

The only problem with this approach is if you have *PageMaker*, *Nutshell Plus*, or *Alpha Four*. These programs do nasty things to files on disk. It's sort of complicated to explain, but the basic problem is that every time you open a file with one of these programs, even if you close it immediately, they alter the date and time on the file. Thus, even though the file on

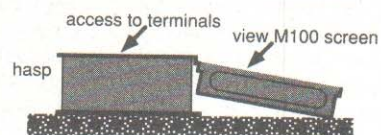


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## SOFTWARE REVIEW

computer B is identical to that on computer A and the transport disk, the new date on the B file makes *FileRunner* think that the file has been changed.

Specifically, then, if I update a *Pagemaker* file on computer A and put it on computer B to print it out, the act of printing out the file modifies it on disk, giving it a time and date different from what the transport disk has recorded. So when I make corrections to the file on computer A and move it again to computer B, *FileRunner* sees two versions of the same file with changed dates! As a result, it gives me a warning that I am about to lose a file with edits if I continue the transfer.

The only solution is to be very careful when working with files from these programs. Normal programs, *Word*, *Lotus 1-2-3*, *Software Bridge*, *The Far Side*, and so forth do not have this problem.

### RUNNING FILERUNNER

Starting *FileRunner* gives you an opening screen that summarizes the computer's drive setup, the current date and time, and the options available: Quit, Help, Specify Files, Utilities, Set-up, and Start File Transfers (see figure 1).

The F1 key is always available in every screen, and the help is well-written, with enough instructions to get you through the program without requiring the manual at your side all the time.

Before using the program, you should set the options you want the program to use. F9-Set-up lets you customize the program's operation: Monochrome operation, screen colors, file compression, virus checking, computer's name, sound, time zone, Daylight Savings Time operation, time correction, and the drive set-up. Most are Yes/No decisions, like time correction (Do you want *FileRunner* to correct the time of you PC when it begins to lose time?). The two important choices to make are Virus checking and file compression.

Virus checking uses the commercial program *Virex* to check each file transported by *FileRunner* to ensure it does not have any viruses hidden in it, so you don't inadvertently spread a virus to all your computers. It doesn't take much time (only a few seconds), so I suggest you set this option to Yes. Similarly, the file compression option should be set to Yes. It definitely slows things down, almost doubling the time it takes to move a file, but the trade-off in increased space is worth the wait. I have seen files drop in size from over 500K to under 85K, allowing me to use only one disk to carry my files instead of three.

FileRunner(tm)		amiga - julyaugust92
---Operational Status: Looking for Runner Files on C:\PM3\'		
Statistics:		
Runner file specifications.....	20	
Runner files on A:.....	20	
---Messages: WARNING: Directory C:\PM3\AMIGA\ does not exist but is found in a File Specification.		
Press any key to continue . . .		
F1-Help		ESC-Exit

Figure 3. If you don't have the subdirectory on one computer that you do on the other, this is the message you get for each file in that subdirectory that you have selected.

It is a smart file compression utility, and can detect when a file is already compressed, saving you time in transfers.

Next, you need to format and create a *FileRunner* data disk. If you don't have a formatted disk handy, you can make one in the F8-Utilities submenu.

This menu provides you with both hard drive and diskette operations. For the hard drive you can view, delete, rename, and move files, and you can review and delete *FileRunner* history files (where it tracks files and their time

**I have seen files  
drop in size  
from over 500K  
to under 85K.**

and date stamps).

For the *FileRunner* diskette, you can view files on the disk, change the name of a disk, change the hard drive assigned to a disk, or format a disk. Two additional utilities reset the computer's date and time, and check the computer for viruses.

All the utilities work easily, with help sections if you have difficulties. The screen is actually divided into two main sections: one listing the options, the other, a nineteen-column wide area

gives a simple explanation of each option as you scroll through them with the arrow keys. The ESCape key returns you to the main menu.

With a formatted disk in hand, you are ready to specify the files you want to track. Put the disk in your drive and press F2. The program checks the disk for information, then warns you that this is not a *FileRunner* disk and tells you how to make it a *FileRunner* disk by pressing F2 again.

Next, it displays your computer's hard disk drive directory tree. Use the arrow keys to move up and down the directories. If you want an entire directory selected, press F3. If you only want certain files in a directory, press ENTER.

File selection is limited, in this release, to 200 file specifications (the technical support person said the next release will increase that to 300 files). The real limit, though, is the space available on your *FileRunner* disk. If you are using 720K disks, you might be able to squeeze as much as 2MB of data. A 1.44MB disk might fit as much as 4MB of data.

Selections can be made either by scrolling through the directory and selecting the files, or by using wildcards to specify groups of files, such as all files that start with AB, or files with the .DOC extension. Unfortunately, there isn't an exclusion option with this release. So, for example, in this version you can't specify all files in a subdirectory except .BAK files (it is promised for the next one, though).

The disadvantage to this selection process is that you have no idea how much room is available on your diskette. There is no *Free Space* command. So, after specifying one directory, and transferring it to the diskette, you don't know if



there is room for another directory until you actually start transferring files. Then, the program gives you a running count of space available as it moves each file.

You can, of course, unselect a file and have it discarded from the *FileRunner* diskette.

After identifying the files you want to transfer, the only step left is *F10*, transfer files.

This step is usually a simple one. Put your *FileRunner* disk in the drive, run the program, and press *F10*. The files are quickly transferred. The next time you update your files, only the ones updated are changed.

This process does have several areas where you can mess up. First, the program requires that the subdirectories be identically named. That is, both computers, A and B, must have the subdirectory in existence, or the Hard Drive specification at the opening menu must contain all the subdirectory information. For example, if I have a subdirectory on computer A called *C:\PM3\JULYP100*, then computer B must have the identically named subdirectory or computer A's Hard Drive specification at the opening screen must say *C:\PM3\JULYP100* while computer B's Hard Drive specification at the opening screen must say *C:\JULYP100*.

Subsequent subdirectories inside of *\JULYP100* are automatically included, but subdirectories of the same submenu level as *\JULYP100* are not.

Attempting to use the program with a second computer without the properly identified subdirectory path causes the program to give you an alert message that the required subdirectory path ex-

ists in the *FileRunner* specifications but not on your hard drive for each file with that subdirectory name. For me, that first time was thirty-five files, and I thought something was wrong with the program as I pressed *ENTER* in response to the prompt and did not notice that that prompt flickered as it went to the next file.

Locking the two computers into using the exact same subdirectory name cured the complaint.

Also, by making sure that both (or all) your computers use the same directory names for shared files, you can transport several directories of files on one disk. Or

## FileRunner is fast and efficient.

you can use several disks for special groupings. Disk one might include directories A, B, and C, while disk two might have A, and D only.

The other possible mistake can occur the first time you are transferring files to the diskette. The program warns you that that file does not exist on the diskette and asks if you want to delete it from your hard drive. If you are not paying attention, you can accidentally erase important files.

While *FileRunner* is moving files, it gives you a running description of what

it is doing: The number of files on the diskette and the hard drive that match the specifications are listed, with the information on how many files on the diskette are not on the hard drive, how many files on the hard drive are not on the diskette, the number of changed files on the diskette, and the number of changed files on the hard drive.

As it transfers each file, it tells you the size of the file, the free space available on the disk, the position number of the file in the transfer process (number six of eight, for example).

The free space listing is somewhat unsettling to watch as you see it report that you have 200K free and the file to transfer is 300K. I was quite startled the first time I ran the program to see *FileRunner* squash 400+K files to an average size of 150K. Three times in a row I watched it squash a 300-400+K file when the free space reading was under 400K, and ended up with 80K still free!

### I LIKE IT

The program is fast and efficient. It provides a reliable and effective method of making sure that only the latest edition of a file is on all the computers you use. When you enable the file compression, you can stuff much more than would normally fit onto a diskette. The virus checking software is unobtrusive.

For archiving purposes, *FileRunner* is a great way to make room on your hard drive without having to go through the tedious process of remembering to backup your hard drive. After using *FileRunner* for all of our June 1992 issue files, I just hit *F10* one last time then put the *JUNE 1992 FileRunner* disk away and erased the directory from all the computers. Instant backup.

If you use more than one computer, or have to share files with others, *FileRunner* is a must-have program.

### PRODUCT SPECIFICATIONS & SUPPLIERS

#### *FileRunner* — \$99.95

Requires MS-DOS 3.1 or greater, 512K RAM (free), hard disk drive with 750K free, and monochrome or CGA (or higher) display.

For transporting files repeatedly between computers and for easy archival of hard drive to floppy storage.

MBS Technologies  
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(818) 572-0258  
(818) 355-7862 (fax)

FileRunner(tn)		John's Critical Files	
Operational Status:			
Transferring files from C: to B:			
Statistics:			
Runner file specifications.....	1	On B: and not on C:.....	9
Runner files on B:.....	4	Later files on B:.....	9
Runner files on C:.....	19	On C: and not on B:.....	16
Space on B: (bytes).....	723798	Later files on C:.....	9
CHARGES.DAT size (bytes).....	36319	Transferring.....	2 of 16
Messages:			
CHARGES.DAT is on C:\ACCOUNTG\			
This file was created on this PC.			
Press I to Transfer to B:			
Press D to Delete from C:\ACCOUNTG\			
Press I to Ignore file transfer at this time.			
Press A to transfer All 15 file(s) without confirmation on each file.			
Press I, D, I or A-			
F1-Help		ESC-Exit	

Figure 4. The *FileRunner* transfer screen, displaying the message you get when a new file is found on the hard drive that is not on the transfer diskette.



**COMPATIBILITY:** All computers.

# Talking to Your Computer

## *A Comparison of Popular Computer Languages.*

*by James Toth*

**I**t has been said that computers are very capable, very obedient, and very stupid servants. They do exactly what you tell them to do — no more, no less. But in order to tell them what to do, you must speak their language.

Strangely enough, many computer users hardly speak their language at all. They simply run programs that were written by other people who do speak the language. The person who wrote the program is acting as their translator. That is OK for many purposes, but it is not as fast, efficient, or fun as sometimes eliminating the middle man and talking directly to the computer yourself in its own tongue.

Learning a computer language is not a grueling undertaking. Lots of people consider to be more like recreation or a hobby than like work, and you don't need to develop all the skills of a professional programmer. The only real problem that a beginner faces is where to begin. There are dozens upon dozens of computer languages. Which one is the right one?

Let's take a look at some of the more prominent computer languages and try to get a feel for what they are like. Perhaps you will find one that appeals to you.

Let's begin at the beginning. In the beginning, God (or someone) created machine language. Machine language is a totally numerical programming language, and you won't like it. A typical machine language instruction looks like this:

11001010

How's that for obscure? Imagine writing a program that contains a few hundred or thousand of these numerical instructions. Before long, every instruc-

tion would begin to look pretty much like all the others. The totally numerical way of machine language programming seems pretty tedious and error-prone to humans.

So why does anyone bother with machine language at all? The reason is that a computer is an electrical number machine, and the binary 0's and 1's constitute its native tongue. A computer is a collection of thousands of microscopic silicon switches, each one of which can

### **So why does anyone bother with machine language at all?**

be either on or off. The 0 can represent an 'off' state, and the 1 can represent an 'on' state. It is the most natural language in the world for a computer. In fact, all other computer languages must at some point be translated into machine language for the computer to understand them.

This translation step, by the way, takes time, and it tends to slow down these other languages considerably. This makes machine language the fastest language around.

But humans can't deal with all those 0's and 1's. 11001010 looks too much like

11011010. And even with the 0's and 1's translated into shorter decimal or hexadecimal numbers, it is difficult to remember the meaning of all those numbers.

So there quickly arose assembly language. Assembly language instructions are mnemonics instead of numbers. In order to make it more palatable for humans, each machine language instruction is replaced by a short word-like instruction that sounds a bit like what the instruction does. Here is a typical assembly language instruction:

**MOV AH, 8**

It tells the computer to move the number 8 into the computer's AH register. Of course.

Assembly language's short mnemonics are easier for humans to remember than machine language's strings of numbers. They also are easy to translate into machine language before you actually ask the computer to run your program. In fact there are programs (called assemblers) that do this translation for you. Thus you can have the advantage of machine language's speed, without risking drowning in a sea of numbers.

However, there is still a bad side to assembly language. A single typical assembly language instruction does very little by itself. It might tell the computer to move one byte (character) of information from somewhere to somewhere else within the computer, or it may instruct the computer to perform some simple arithmetic calculation. Very many of these little assembly language instructions are needed to do anything of consequence.

Reading and trying to comprehend a program written in assembly language is very much like trying to read a novel by seeing only one letter of it at a time. It is



a considerable task to piece together all of the microscopic chinks of information into complete ideas that make some sense in the overall scheme of things. For beginners, there are better ways of programming than using assembly language.

The better ways are what programmers call *high level languages*. The instructions that constitute these languages are bigger, more comprehensible ideas. Reading a program written in one of these higher languages is more like reading a novel by seeing a sentence or several words of it at a time. It is much easier to understand the big picture.

Back in the olden days when I was making my first attempt at learning to program, I found myself working with a language called APL (A Programming Language) and another one called FORTRAN (FORmula TRANslation). Although both of these are high level languages, I would not recommend them to

perience, you can read the program lines and immediately get some idea about what is going on. The X is a numeric variable, just like in high school math class. Line 10 says to start the count at 1. Line 20 prints the current count on the screen. Line 30 increases the count by 1. Line 40 checks to see if a count of 10 has been reached yet. Line 50 continues the counting process until line 40 eventually stops it. Pretty easy stuff.

In fact you probably could think up some modifications to this little program

without much trouble. For instance, what would you change about the program to make it count to 100 instead of to 10? Or how would you make it count by 2's? Or how would you make it start the count at 5? No big deal. As with human languages, there are many dialects of BASIC. However, there are more similarities than differences, and after learning one of them, you should be pretty comfortable using the others, too.

We mentioned earlier that all computer languages must at some point be

## APL is filled with strange symbols.

a beginner. APL is filled with strange symbols like arrows and squares and triangles, and it looks like it came from another planet. FORTRAN is more English-like, but it involves surprisingly many annoying details and restrictions. Again, I think there are better ways to begin.

The most widely known of the easier computer languages is BASIC. That's BASIC, not Basic. BASIC is an acronym for Beginner's All-purpose Symbolic Instruction Code. As its name implies, it is a language that was created with beginners in mind, and microcomputers that don't run BASIC programs are few and far between.

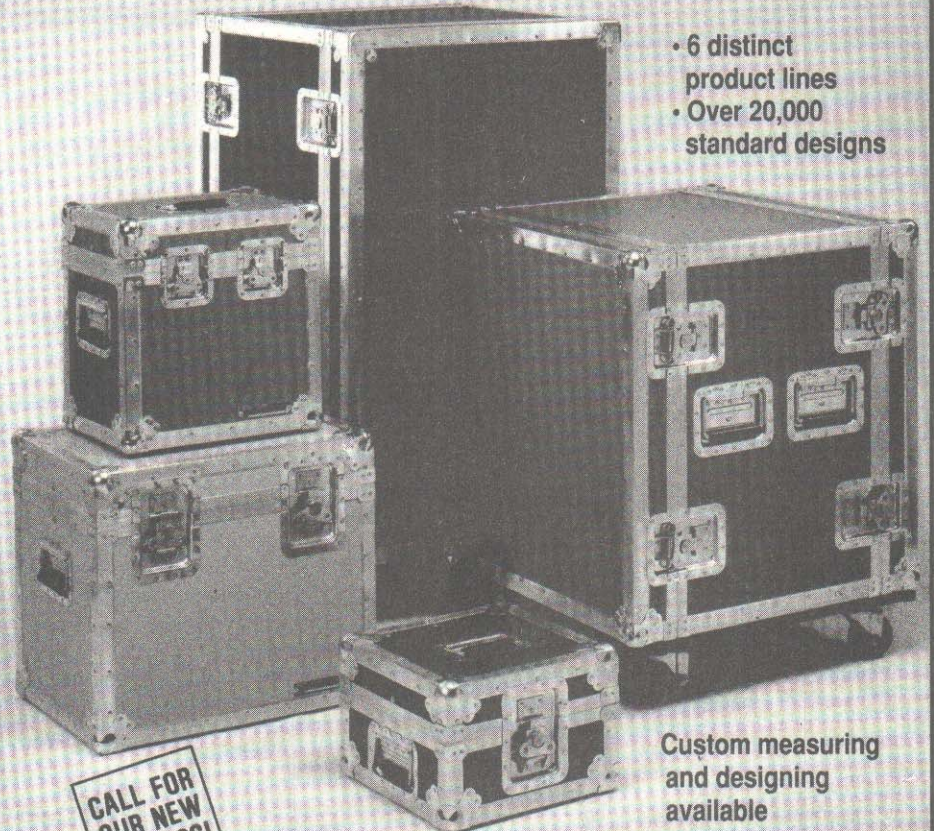
Let's look at a short BASIC program to see what this language is like. This program merely counts on screen from 1 to 10.

```
10 LET X=1
20 PRINT X
30 LET X=X+1
40 IF X>10 THEN END
50 GOTO 20
```

Even without any programming ex-

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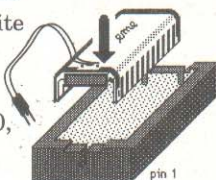




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## PROGRAMMING LANGUAGES

translated into machine language in order for the computer to understand them. In doing this, some BASICs are interpreted and some are compiled.

In the case on interpreted BASIC, you simply type your programs and immediately run it. The translation step is done line-by-line while the program is running. This translation while running slows things down considerably.

In the case of compiled BASIC, usually you type the program as text, then you use a compiler program to translate (compile) the entire program at one time, and then finally you run the compiled version. Since the translation is not being carried out while the program is running, compiled BASIC programs run much faster than interpreted ones. The only drawback is that you do the extra compiling step.

But BASIC is not the only good language for beginning programmers.

## The language tries to force you to write well-structured programs.

Another language that is popular for teaching programming is Pascal. That's Pascal, not PASCAL. Pascal is not an acronym. The language was named after Blaise Pascal, the French physicist and mathematician who managed to make an adding machine in the 1600's.

Let's look at a short Pascal program to see what this language is like. As before, this one counts from 1 to 10.

```
PROGRAM COUNT;
VAR X: INTEGER;
BEGIN
  X:=1;
  REPEAT
    WRITELN(X);
    X:=X+1;
  UNTIL X>10;
END.
```

As with the BASIC sample program, even a novice programmer can read the Pascal program lines and immediately get some idea about what is going on. You can easily see where the count is started at 1 (fourth line), where the cur-

rent count is printed on screen (sixth line), where the current count is increased by 1 (seventh line), and where the decision is made whether 10 has been reached yet (eighth line).

You may also notice some other things that have no counterparts in the BASIC program. Virtually all Pascal program lines end with a semicolon. Pascal programs have names (first line). Variables must be declared as to name (X) and type (integer, real, or whatever) early in the program (second line). And the end of the program is clearly marked as such. All of this extra stuff is required in Pascal programming because the language attempts to force you to write well-structured programs. It is difficult to be a sloppy Pascal programmer.

Pascal usually is a compiled language. After you type the program as text, you use a compiler program to turn it into something that you can run on your computer. Consequently, Pascal programs run rather fast.

And as with BASIC, the various dialects of Pascal are pretty similar. In fact, the core of these different dialects is essentially identical. It is the enhancements to the core-standard Pascal that vary.

In addition to BASIC and Pascal, there is another language that you may want to consider. It is called C.

Interestingly enough, it evolved from a language called B.

Let's look at a short C program to get a feel for this language. As you might expect by now, this programs counts from 1 to 10.

```
main()
{
  int x;
  x=1;
  while (x<=10)
  {
    printf("%d\n",x);
    x=x+1;
  }
}
```

While this sample program may look a little more obscure than the previous samples, you probably still can see in it the essence of "counting to 10." Also, you can notice some of the characteristics of C. It is structured much like Pascal. There is a preference for lower-case letters. It is a compiled language, and therefore it is fast. And it has the special ability to do some low-level operations within the computer, much like assembly language.

C is a powerful language, and it is popular among professional programmers. However, it is somewhat more difficult than BASIC and Pascal, and I suspect that a beginning programmer



## LANGUAGES

may be overwhelmed by it. It may be better to learn *BASIC* or Pascal first, and then move on to C.

There is still another programming language that is worth mentioning here, although you may not want to make it your primary working language. It is called Logo, and it was developed for teaching programming to children. Many adults enjoy it too.

For comparison purposes, here is a short Logo program that (you guessed it) counts from 1 to 10.

```
TO COUNT
MAKE "X 1
DOIT
END

TO DOIT
PRINT :X
MAKE "X :X+1
IF :X>10 [STOP]
DOIT
END
```

Anyone familiar with LISP, and artificial intelligence programming lan-

---

**Would you believe  
there is a language  
called SNOBOL?**

---

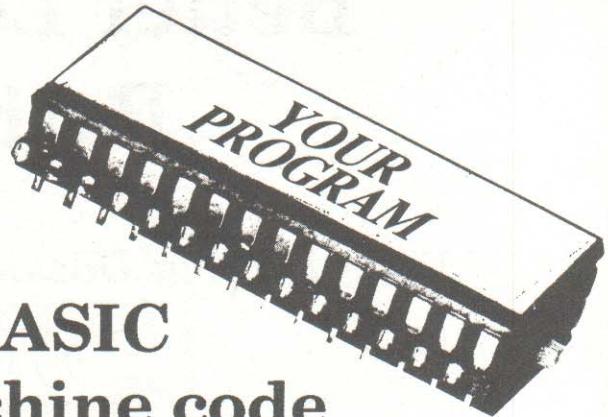
guage, might well have a *deja vu* experience when looking at a Logo program. Logo was patterned after LISP and shares many of its characteristics.

Logo teaches the fundamental principles of programming in a fun way. It is the kind of thing that you can play with and learn something in the process. A prominent feature of this language is an on-screen programmable turtle that can be used to create fascinating graphics. Also, this language can be used to get a feel for artificial intelligence programming.

And there you have it, a quick survey of the various computer languages. It is by no means a complete survey, which would be very long, indeed. (Would you believe there is a language called SNOBOL?) However it should serve to point a beginning programmer in approximately the right direction. All you need to become proficient at one of these languages is your computer, a good book, and some free time to practice (play?). It will be time well spent.



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July/August 1992 PORTABLE 100 33



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# Better Letterheads, Part Three

*Dress Up Your Document with Lines And Boxes*

*by Mike Nugent*

**P**art Three, finally! We're about to start getting "down and dirty," as I mentioned before all those "circumstances" presented themselves.

Before getting math-intensive, let's just ease back into things by learning how to tap some of the graphics capabilities of our printers.

## USING LINE GRAPHICS

Every printer has a "character set," the complete repertoire of characters it can produce. Besides the expected numbers, letters, and punctuation, most printers can produce special characters and symbols such as foreign language characters, currency symbols, line and block graphic characters, and miscellaneous others. We can use those special characters to advantage in creating letterheads, logos, and other special effects in our documents. We might, for example, use them to draw boxes around part of a letterhead or a special section of text.

You'll usually find your printer's character set listed in a table in the printer manual. Many printers offer more than one character set and some means of switching between them.

Figure 1 shows IBM Character Set 1, a common character set and one of several

**So we must do a  
little mental  
translation.**

available on the Diconix 150+ portable printer. You'll see that printers use number values, called ASCII codes, to represent various characters. For example, when the printer receives a value of 65 it prints the letter "A." When it receives a value of 49 it prints the number "1."

Computers, too, represent characters by ASCII codes. Figure 2 shows the Model 100's character set and the keystrokes used to produce those characters. Here, too, an ASCII value of 65 represents "A," and a value of 49 represents "1."

ASCII codes between 32 and 127 are quite standard, producing the same characters on most computers and printers. But codes above 127 are a different story. The characters they produce often vary among different computers and different printers, especially where Tandy printers and computers are concerned.

## TRANSLATION

Figures 1 and 2 illustrate this difference. Whereas ASCII value 147, produced on the Model 100 by pressing GRPH-q, displays a little stick-man character on the screen, that same 147 sent to an IBM-compatible printer produces a foreign language ô character on the printout.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				
NUL	SOH	STX	ETX	END	CR	LF	VT	FF	CR	SO	SI	DC1	DC2	DC3	DC4	CAN	ESC	DEL	SP	!	2	3	4	5	6	7	8	9	0	1	2	3			
4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7		
10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43		
44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77		
78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	
113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	
148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183
184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219
220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Figure 1. IBM Character Set 1 is most common, and one of several character sets available on the Diconix 150+ portable printer.



Decimal	Hex	Binary	Printed Character	Keyboard Character
176	B0	10110000	¥	(GRPH) 7
177	B1	10110001	Ä	(CODE) A
178	B2	10110010	Ö	(CODE) O
179	B3	10110011	Û	(CODE) U
180	B4	10110100	¢	(GRPH) 6
181	B5	10110101	~	(CODE)
182	B6	10110110	ä	(CODE) a
183	B7	10110111	ö	(CODE) o
184	B8	10111000	û	(CODE) u
185	B9	10111001	ß	(CODE) S
186	BA	10111010	™	(CODE) T
187	BB	10111011	é	(CODE) d
188	BC	10111100	ù	(CODE) ,
189	BD	10111101	è	(CODE) v
190	BE	10111110	..	(CODE) =
191	BF	10111111	ƒ	(CODE) F
192	C0	11000000	à	(CODE) l
193	C1	11000001	é	(CODE) 3
194	C2	11000010	í	(CODE) 8
195	C3	11000011	ó	(CODE) 9
196	C4	11000100	û	(CODE) 7
197	C5	11000101	-	(CODE) -
198	C6	11000110	ë	(CODE) e
199	C7	11000111	ï	(CODE) i
200	C8	11001000	á	(CODE) q
201	C9	11001001	í	(CODE) k
202	CA	11001010	ó	(CODE) l
203	CB	11001011	û	(CODE) j
204	CC	11001100	ý	(CODE) y
205	CD	11001101	ñ	(CODE) n
206	CE	11001110	ä	(CODE) z
207	CF	11001111	ö	(CODE) .
208	D0	11010000	À	(CODE) !
209	D1	11010001	É	(CODE) #
210	D2	11010010	Í	(CODE) *
211	D3	11010011	Ó	(CODE) (
212	D4	11010100	Û	(CODE) &
213	D5	11010101	İ	(CODE) I
214	D6	11010110	Ê	(CODE) E
215	D7	11010111	Ë	(CODE) D
216	D8	11011000	Ä	(CODE) Q
217	D9	11011001	İ	(CODE) K
218	DA	11011010	Ö	(CODE) L
219	DB	11011011	Û	(CODE) J
220	DC	11011100	Ý	(CODE) Y
221	DD	11011101	U	(CODE) <
222	DE	11011110	Ê	(CODE) V
223	DF	11011111	À	(CODE) X

Figure 2. Model 100 character set. Using appropriate characters from the Model 100 set, you can produce line and block graphics on your IBM-compatible printer.

Since our goal is to enhance our *printed* documents, our output will of course be the characters in the *printer's* character set. But because we're creating the documents on our Model T's, we must use *Model T* characters to produce them. So we must do a little mental translation; that is, type into our document whichever Model T character has the same ASCII value as the printer character we wish to print.

The IBM printer character set's line drawing and block graphic characters (ASCII 176-223) are ideal for dressing up documents. To use them, we must type in Model T characters with corresponding ASCII values—which happen to produce foreign language characters on our screens. While they may look rather funny on our *screens*, they print out just fine as the desired line and block graphics on our *printers*.

Bill Gerber aptly described how to translate Model T characters to printer characters in his article, "IBM Character Graphics on The Model T" (*Portable 100*, Apr. '91). You might want to read (or reread) it now, to help enhance your understanding of the subject. The article included a handy little chart showing the Model T characters needed to produce line drawing characters on the printer. It's just the right size for taping to the inside of your Model T's battery or option ROM compartment covers, making it readily available whenever needed. I've taken the liberty of including it here as Figure 3, as well as fixing a small error in the original. The "GC" at the top is a reminder that these are GRPH- and CODE-key combinations. Only the 6, marked on the chart by a

M-100/102-T-200 GC									
L	┌	I	┐	E	┌	k	┐		
F	┌	u	┐	o	┌	d	┐		
1	┌	&	┐	(	┌	q	┐		
K	┌	=	┐	v	┌	,	┐		
U		T		7	-	n	=		
8	┌	#	┐	*	┌	j	┐		
9	┌	e	┐	i	┌	y	┐		
-	┌	Q	┐	D	┌	z	┐		
6	┌	l	┐	a	┌	s	┐		
3	┌	.	┐	!	┌	l	┐		

Figure 3. This handy chart lets you translate Model 100 characters to IBM printer line graphic characters.

dot, uses the GRPH key (i.e., press GRPH-6 to produce the character). All the rest are CODE-key combinations (e.g., CODE-L, CODE-q, etc.). Note that case is important: CODE-K and CODE-k produce different characters.

```

.ol 54
.or 384
è^W14
.oc on4
WIDE LOAD INC.4
^W04
.ol 104
.or 754
20 Point Lane4
Boldface, IA 123454
(999)999-9999è4
4
%w %d4
4
.oc off4
←

```

Figure 4. Here's the original Wide Load, Inc. letterhead, to which we'll add some boxes around the text.

## LET'S DO IT

Using these line graphics, we can print single lines, double lines, and boxes to highlight parts of our letterheads, logos, or text. For practice, let's put boxes around parts of the Wide Load, Inc. letterhead from a previous column ("Better Letterheads, Part One," Feb. '92, p. 33, Figure 2). This is shown here as Figure 4.

First, we'll box in the company name with double lines, as shown in Figure 5. Figure 6 shows how I modified the original file to achieve this. I inserted a line of



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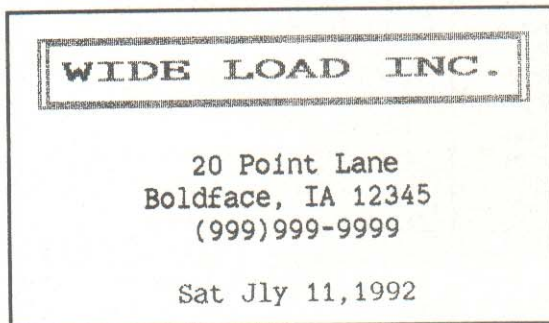


Figure 5. Here's the letterhead of Figure 4 with double-line box added. Figure 6 shows how to produce this result.



Figure 6. "Funky" characters added around company name produce a double-line box in the printout, shown in Figure 5.

line graphics characters just above the company name. On the Model T screen, it looks like a funky letter "i" followed by a string of funky "n's" and a funky "e." From the chart (Figure 3), you can see it was produced by pressing CODE-k (top left double corner), a string of CODE-n's (double horizontal

lines), and a CODE-d (top right double corner). Similarly, the funky "a," "n's," and "u" underneath the company name form the bottom left double corner, double lines, and bottom right double corner.

A CODE-T (appearing as a trademark symbol on the screen) on either side of the company name completes the box, and produces the printout in Figure 5.

And that's all there is to it. Since the line graphics are included between the printer's double-wide commands (^W1 and ^W0), they're printed double-wide, right along with the company name ("Wide Load Inc.").

Note that the reproduction isn't too crisp on the Diconix 150+ portable

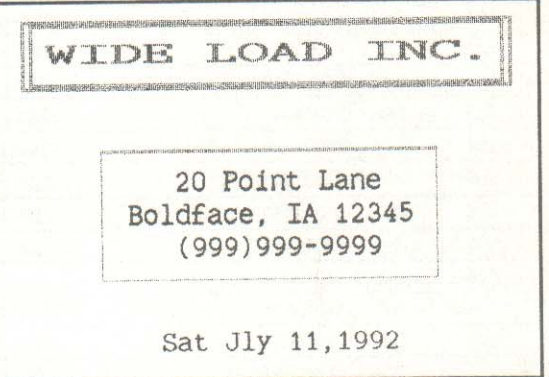


Figure 7. Here's the letterhead again, with a single-line box added around the phone/address text. Figure 8 shows how to produce this effect.

printer I used to create the figures. The quality, of course, will vary with the printer used. Some will be better, and some may be worse. You'll just have to try it on your particular printer.

Continuing our practice, let's add a single-line box around the company address and phone number, as in Figure 7. Figure 8 shows how it's done. The funky "o," "u's," and "f" above the first address line, and the funky "a," "u's," and "i" below the phone number, form the top and bottom of the box. The sides are formed by the funky "u's" flanking each line of address/phone number text.



## SUPER HERO

```
.ol 54
.or 384
e^[W14
.oc on4
aaaaaaaaaaaaaaaaaaaaa4
WIDE LOAD INC.4
aaaaaaaaaaaaaaaaaaaaa4
^[W04
.ol 104
.or 754
aaaaaaaaaaaaaaaaaaaaa4
U 20 Point Lane U4
U Boldface, IA 12345 U4
U (999)999-9999e U4
aaaaaaaaaaaaaaaaaaaaa4
4
%w %d4
4
.oc off4
4
```

Figure 8. "Funky" characters added around the address/phone text produce a single-line box in the printout. See article text for additional information on this technique.

ing within it—we must manually center the text within the box beforehand, as in Figure 8.

Remember: Write ROM counts characters! It will try to center X number of characters on a line between the margins. So we need to make the number of characters per line equal so the sides of the box will line up properly.

Okay, then why is the phone number line one character longer than the others? Because Write ROM does *not* count the funky "e" after the phone number. That character, produced by pressing CODE-e, was assigned by me in my Write ROM's PRINT Code settings (see Write ROM manual, PRINTER FEATURES) to control my printer's emphasized (bold) feature. Although Write ROM counts characters, it does *not* count its own PRINT Code characters. Therefore, in counting the number of characters in the phone number line, the CODE-e is ignored. So I added another space in the line to make the centering command think it's the same length as the others.

Well, there you go. Granted, all those boxes around our Wide Load, Inc. letterhead look kind of dumb, but it shows you how to get started on your own ideas for your own letterheads and documents.

### STAY TUNED

I'm going to wrap this up now, so I don't miss the deadline again. Heaven knows, Part Three has been a long time in coming, and I don't want to blow it again. In Part Four we'll continue with some of the other graphics characters, the block graphics, such as I used to make my TMNE letterhead ("Dressing Up Your Documents," Nov. '91, p. 23, Figure 1). In the meantime, if you'd like to experiment on your own, try out ASCII character values 176-178 and 219-223.

Now I'm outta here. (Gotta go deal with a fresh batch of "circumstances." Sheesh!)

Nuge

Mike Nugent can be reached at Tri-Mike Network East, P.O. Box 372, Peterborough, NH 03458, tel. (603)588-2010; on CompuServe (71426,1201); on MCI Mail (TMNEAST); and on packet radio (WB8GLQ @ KA1SRD.MA). If requesting a reply by postal mail, please enclose an SASE.

Again, refer to the translation chart to see how it's done.

Ah, but there's a new twist or two here! In the original file (Figure 4) the lines of address/phone number text begin at the left of the screen and are automatically centered by the .oc on command (fourth line) when printed. To center the whole box—and still maintain text centering

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July/August 1992 PORTABLE 100 37



## It's a Bird, It's a Plane, It's ... UnMouse!

Okay, you're a laptop user. You don't like carrying a mouse around and you loathe the trackball, because it makes you feel too large and gawky. What do you do?

Well, start looking for a laptop equipped with the UnMouse Touch Tablet from MicroTouch Systems. MicroTouch has recently made available the OEM (original equipment manufacturer) version of its UnMouse, touch-sensitive tablet.

The OEM UnMouse, which is customized to fit each manufacturer's specifications, is a small tablet, typically 2 inches by 3 inches, that is sensitive to the touch of a finger. To move the cursor, the user merely touches the glass surface of the sensor. Finger movements are converted into cursor movements in a method similar to other devices where faster movements result in large cursor movements.

While some manufacturers are addressing the need for built-on pointing devices in portable computers by building miniature trackballs into their units, the OEM UnMouse has numerous advantages over these scaled-down trackballs, including greater ease-of-use, ease-of-integration and durability.

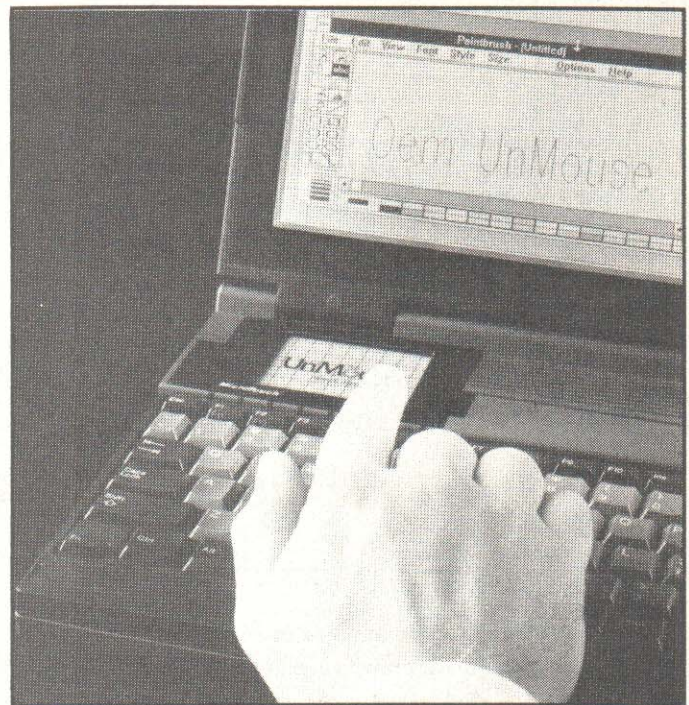
The UnMouse requires only one or two strokes for most cursor movements compared to multiple

rotations required from the same motion with a small trackball. In addition, a second hand is often required to activate the trackball "click" button — with the UnMouse, the user merely taps on the glass. Finally trackballs are often loosely set in their casing, making them difficult to control.

Using the UnMouse requires only very light finger pressure, unlike earlier resistive membrane touch tablet technology made of plastic. These tablets were pressure sensitive and often required a sharp stylus to activate the sensor. Because the UnMouse relies on capacitive sensing, only the slightest contact between the finger and sensor are required to initiate cursor movement.

The OEM UnMouse electronics consist primarily of a CMOS chipset which is easily integrated into the notebook's motherboard. By comparison, built-in trackballs are bulky. Even micro-trackballs require a space of 14mm thick, making them difficult to design into today's notebook computers.

The OEM UnMouse is designed for minimal power consumption and utilizes a BIOS-controllable "sleep mode" when not in use. Under 1 mA of power is used when the UnMouse is in sleep mode.



The OEM UnMouse manufactured by MicroTouch Systems.

Durability is a major advantage the OEM UnMouse has over mechanical input devices. The product has no moving parts, with nothing to wear out or break. It is also easy to clean, compared to trackballs and mice, which must be disassembled to be cleaned.

The OEM UnMouse is available to manufacturers immediately. Pricing, which includes sensor, CMOS chipset, and software, be-

gins at \$40 in quantities of 100. Significant discounts are available in OEM quantities.

Please contact: Janet Pannier, MicroTouch Systems, Inc. 55 Jonspin Road, Wilmington, MA 01887. (508)694-9900, fax (508)694-9980, for more information. Or circle 69 on reader service card.

## Where's The Cursor?

If you've ever had trouble locating the cursor on your computer screen, then you can understand why AApeX Software developed the *Cursorific!* series. Their latest product, *Cursorific! Professional 2.0* allows users to create their own cursors, animate them, or even replace a standard cursor with a scanned-in corporate logo. *Cursorific! Professional 2.0* comes with 300 selectable cursors and 20 different animations included. The Cursor Image Editor allows you to design your own cursor images, while the Animation Editor brings them to life. *Cursorific! Professional 2.0* is designed for laptop users who have trouble locating the cursor, computer programmers looking for a cursor resource, hi-res display us-

## Electronic References Now Available on Disk

Got questions? Need answers and need 'em NOW? Try the Instant Answers series from Reference Software International. These products run as both terminate and stay resident (TSR) and stand-alone products and work with either DOS or Windows.

ers, or anyone who wants "functional fun".

*Cursorific! 2.0* requires Microsoft Windows 3.0 or higher, a mouse, EGA, VGA or higher resolution display, 57K RAM of Windows memory, and 500-600K of disk space. Suggested retail price for *Cursorific! 2.0* is \$69.95.

For more information, contact AApeX Software Corporation, P.O. Box 13379, Reno, NV 89507. (800)728-7650, fax (702)324-4578. Or circle 61 on reader service card.

The series includes:

*The Electronic Business Writer's Handbook* - includes a glossary of computer terms, common foreign words, famous quotations, as well as general rules on grammar, punctuation and business correspondence. The desktop publishing chapter provides graphics illustrating such terms as kerning, leading and fonts and explanations of desktop publishing terms.

*The Electronic Financial Mathematics Handbook* - discusses such topics as simple and compound interest, investment information, annuities calculations and bond formulae. Each section presents a financial formula in algebraic and Lotus 1-2-3 spreadsheet notation with a definition of the concept and examples of its use.

*The Electronic Associated Press Stylebook* - offers writing guidelines on style, usage, punctuation, abbreviations and so on.

*The Electronic Complete Secretary's Handbook* - provides sample business letters that can be exported into word processing files for personalized editing. DOS version requires DOS 3.0 or greater and 58K RAM; Windows version requires Windows 3.0 or 3.1.

The series is available from Reference Software International, major computer retailing and warehousing outfits, as well as the following distributors: Ingram Micro, Kenfil, Merisel, Soft-Kat, Software Resource, JB Marketing. Retail price is \$59 per book or \$179 for the four-volume set. Or circle 63 on reader service card.



**Changes your Model 100 into a totally different computer with capability you never thought possible.**

**Lucid<sup>TM</sup>**  
**on Snap-In<sup>TM</sup> ROM**  
*Another fine product from the innovative people at PCSG!*

Infoworld  
rated Lucid's  
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"excellent"

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AVAILABLE  
ON  
M-200

**TMNE says "Satisfaction Guaranteed  
or your money back within 30 days!"**

LUCID<sup>®</sup> is here now. It is on a ROM cartridge that snaps into the compartment on the back of your Model 100. It takes no memory to load and no memory for operating overhead. That means you have the full 29.6k bytes free to store your data.

First, LUCID<sup>®</sup> is memory conserving. It will let you build a large spreadsheet—255 row by 126 column capacity. You build huge spreadsheets in your Model 100's RAM that could consume 80 to 100K on a desktop computer.

Secondly, LUCID<sup>®</sup> is fast. LUCID<sup>®</sup> is so rapid, a 36 column corporate financial statement took less than 4 seconds to calculate.

Thirdly, LUCID<sup>®</sup> has features you won't find in most other spreadsheets. For example, when you type a label (text) it will cross column boundaries; in other words when you type a label or title it will appear as you type it irrespective of column or width. LUCID<sup>®</sup> also allows you to set column widths individually, and of course LUCID<sup>®</sup> has insert row and insert columns, as well as other standard features. LUCID<sup>®</sup> even lets your formulas refer to cells in other spreadsheet files.

Further, LUCID<sup>®</sup> has what no other spreadsheet has: Cut, Copy, and Paste. It uses the same keys as Cut and Paste in TEXT, but here's the difference: it takes all the formulas with it when you paste and they all automatically recalculate with the entire sheet.

And here is what is really amazing. You can copy or cut from one spreadsheet and paste into another spreadsheet or even a TEXT file.

LUCID<sup>®</sup> supports all BASIC math functions as well as Log, sine, cosine, tangent, exponentiation and other sophisticated math functions.

LUCID<sup>®</sup> has so many features that you will say "this is what I need in a spreadsheet", such as automatic prompting of an incorrectly typed-in formula showing just where the mistake was made.

LUCID<sup>®</sup> has expanded "go to" functions that remember and produce a windowing capability.

But perhaps most remarkable is that LUCID<sup>®</sup> is not only a spreadsheet but a program generator as well. First, LUCID<sup>®</sup> lets you protect all cells against entry or change, and then unprotect just the cells you want for someone else to use as input fields.

LUCID<sup>®</sup> will not only process values, but text input as well so that the facts other than numbers can be responded to. LUCID<sup>®</sup> has the ability for you to refer in a formula to cells containing words. This feature combines with the capacity of doing "if then" statements that work by doing table look-ups against even massive X/Y charts of text or numerical information. You can produce a program that responds to inputs with no programming knowledge whatsoever.

You can prepare a report section in your spreadsheet with instructions to your user for printout, and they can produce a personalized printout that responds to their input. All your formulas and tables that did the calculations and provided the facts are invisible to that user. LUCID<sup>®</sup> is useful for doctors for patient questionnaires, troubleshooting technicians, purchase clerks, people doing job quotes, stores for customer workups, insurance agents and anybody who needs to process specific facts and numbers to produce a report based on those responses.

LUCID<sup>®</sup> comes with a manual that explains not only the characteristics of LUCID<sup>®</sup>, but will train you how to use a spreadsheet even if you have never seen one before. You are shown how to do budgets, forecasts, breakeven analysis amortizations and many other types of personal and business reports and calculations.

User friendly is such an over-used term in this industry, but a typical comment has been "I have never seen a spreadsheet that does so much, and yet LUCID<sup>®</sup> is so much

easier and faster to use."

LUCID<sup>®</sup> is a result of a most exhaustive developmental effort in which PCSG's objective was to develop a spreadsheet that was better than the state-of-the-art. We are so pleased because LUCID<sup>®</sup> provides for the Model 100 spreadsheet capability you cannot equal on a desktop computer.

LUCID<sup>®</sup> is, in our opinion and that of those who have examined it, a breakthrough. We sell it on a 30 day trial. If you are not completely satisfied, return it within 30 days for a full refund. Priced at \$99.95 on snap-in ROM. Please add \$5.00 for shipping and handling. Mastercard, Visa, American Express or C.O.D.

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Text processing power that no other program can equal.

NOW  
AVAILABLE  
ON  
M-200!

# Write ROM<sup>®</sup>

on Snap-in Cartridge \$99.95

(please add \$5.00 shipping and handling charge to your order)

**TMNE says "Send it back in 30 days for a full refund if you don't agree."**

WRITE ROM is the definitive word processing extension for the Model 100. PCSG produced the first text formatter for the Model 100, now sold by Radio Shack as Scripsit 100. Now, 18 months later, PCSG introduced WRITE ROM. Those who have experienced it say WRITE ROM literally doubles the power of the Model 100.

WRITE ROM — as its name implies — is on a snap-in ROM. You simply open the little compartment on the back of the Model 100 with a quarter and press WRITE ROM in. It's as easy as an Atari game cartridge. You can use other ROM programs like Lucid whenever you wish.

WRITE ROM lets you do every formatting function you'd expect, like setting margins, centering, right justifying and creating headers and footers. But it does them under function key control.

WRITE ROM remembers your favorite format settings so you can print a document without any setup, but you can change any formatting or printing parameter instantly with a function key.

WRITE ROM's "pixel mapping" feature shows you an instant picture on the screen of how your printout will look on paper.

In all there are 64 separate features and functions you can do with WRITE ROM, and some of these features are truly breakthroughs for the Model 100.

First, WRITE ROM lets you do search and replace. Any word or phrase in a document can be searched for and replaced with any other phrase where the search words appear.

Second, WRITE ROM lets you send any text (formatted or not) to any other computer over the phone with just a function key. What's more, it dials and handles sign-on and sign-off protocol automatically.

Third, WRITE ROM has a wonderful feature called Library that lets you record favorite phrases, words or commonly used expressions (often called boilerplate).

Any place you wish Library text to appear you just type a code. WRITE ROM automatically inserts the text just like a Xerox Memory Writer. Picture what you can do with that kind of capability.

WRITE ROM is blindingly fast. No one can claim faster operation. Because it is on ROM it uses virtually none of your precious RAM. It works with any printer, serial or parallel. You can make a duplicate copy of a document file under a new filename. Rename or delete (kill) any RAM file with function key ease.

This description only scratches the surface of this amazingly powerful piece of software. Dot commands allow control of such things as margins, centering, line spacing and other changes in the middle of a document. Most are WordStar<sup>™</sup> compatible.

A mailmerge feature allows you to send the same document to every name on your mailing list, personalized for each recipient.

WRITE ROM enables you to do underlining, boldface and correspondence mode as well as any other font feature like superscripts that your printer supports, in a way that many users say "is worth the price of the program."

To underline you don't have to remember a complicated printer code. You just type CODE u, and to stop underline, CODE u again. The CODE key is to the right of your spacebar. Boldface? CODE b to start and stop. Easy to remember and do. Five different printer features of your choice.

We couldn't list all the features here. For example, you can select not just double space but triple or any other. You can use your TAB

key in a document. WRITE ROM allows you to indent. This means you can have paragraphs with a first line projecting to the left of the rest of the paragraph. WRITE ROM has a feature unique for any word processor on any computer. It's called FORM. FORM is an interactive mechanism that lets you create screen prompts so that you or someone else can answer them to fill out forms or questionnaires.

With FORM, any place that you had previously typed a GRAPH T and a prompt in a document, WRITE ROM will stop and show you that prompt on the screen. You can type in directly on the screen and when you press F8 you see the next prompt. It goes to a printer or a RAM file.

Think how you can use FORM. A doctor or nurse could use it for a patient's history with each question appearing on the screen. An insurance salesman could use it for his entire questionnaire. You could construct a series of prompts to answer correspondence, typing the answers, even using Library codes. This feature lets you answer letters in rapid-fire fashion, each with personalized or standard responses.

Before WRITE ROM you had to be a programmer to create a series of prompts. Now it's as simple as GRAPH T.

PCSG makes the claim that WRITE ROM is the easiest, fastest and most feature-rich formatter for the Model 100. We're happy to offer WRITE ROM because it expands the 100 to a dimension of text processing you cannot equal on even larger computers.

We brashly state that WRITE ROM is the best you can buy. But put that to the test. If you aren't as excited as we are, return it for a full refund. Priced at \$99.95 on snap-in ROM. Mastercard, Visa, American Express and COD. Please add \$5.00 shipping and handling charge.

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## More Memory On The Road With Traveler

Add up to 130MB of disk space to your notebook, laptop, palmtop or desktop computer with the *Traveler-HD* from MPM. Available in six memory configurations and weighing a featherlight 1.5 pounds, the *Traveler-HD* works with Microsoft *Windows*, *MS-DOS* (3.0 or higher), *DOS*-based utilities, RAM disks, applications software and practically all shareware. It can't be any easier to install - just plug it into the printer port of your computer.

The *Traveler-HD* features a 2.5" IDE hard disk, intelligent IDE controller, pass-through parallel port and integrated caching software. Rechargeable Ni-Cad batteries offer an average of 5 hours of use.

Technical specifications are:

Average seek time: 15-25ms

Transfer Speed: >4mb per Minute

Battery time, Continuous: 2-1/2 hours

Battery time, Standby: 10 hrs.

Battery time, Average: 5 hours

Battery Recharge Time: 12 hours

RAM required by driver: 3 K

Hard Disk Type: 2.5 inch  
Hard Disk Interface: IDE  
Dimensions: 1.5"h x 5"w x 5"d  
Weight (with disk drive) 1.5 lbs.  
Compatibility list (partial):

Commodore, Compaq, Epson, Hewlett Packard, IBM, Leading Edge, Mitac, MEC, Packard Bell, Panasonic, Samsung, Sanyo, Sharp, Tandy, TI, Toshiba, Zenith, Zeos

If this isn't powerful enough for you, try the *Traveler-AC*, a four-pound, AC-powered version that provides up to 500MB of portable disk space.

Price is dependent upon memory configuration: *Traveler-HD*: \$340 - \$1,099; *Traveler-AC*: \$699 - \$2,299. For more information, contact Julie Becker, Marketing Manager, Memory Products & More (MPM), 15285 Alton Parkway, Suite 200, Irvine, CA 92718, (714) 753-1200, (714) 753-1216 (fax), (800) 222-8861. Or circle 66 on reader service card.



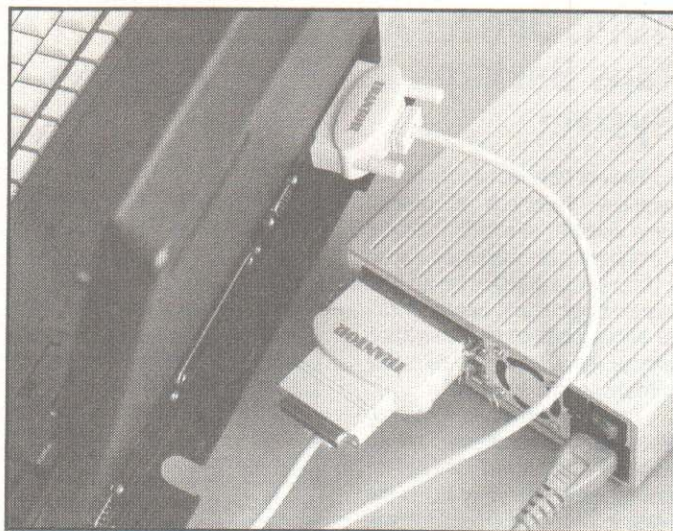
NYNEX NortheastAccess lets you get by without all these phone books!

## NYNEX Offers On-line Service

Finding business phone numbers in other parts of the country can be difficult unless you know exactly what you're looking for. But there's no need to despair, NYNEX has

made your life a little easier with their introduction of NYNEX NortheastAccess, its on-line directory of Yellow Pages listings.

NortheastAccess provides fast



The new MiniSCSI Plus from Trantor Systems.

## A New MiniSCSI For Your Portable

New and improved? You bet. Trantor Systems has reworked its popular **T348 MiniSCSI**, adding new features and abilities. The new **T348 MiniSCSI Plus** features an integral three-foot cable, built-in SCSI termination and a more functional physical design, since the portion of the product containing the active circuitry has been moved adjacent to the SCSI device. This new design makes the connection to the computer port much smaller than the original **MiniSCSI** and eliminates the need for a separate SCSI table.

While the original **MiniSCSI** was designed with unidirectional capability only, the new **MiniSCSI Plus** is fully compatible with both unidirectional and bidirectional parallel ports. This offers the capability to

move full 8-bit data blocks in both directions between the host computer and the device(s) connected to the parallel port, at similar speeds in either direction. Additionally, the **MiniSCSI Plus** is supplied with a standard ASPI (Advanced SCSI Programmer's Interface) Manager software interface and ASPI-version device drivers.

The **MiniSCSI Plus** is retail priced at \$229.00. The original version of the **MiniSCSI** will continue to be sold at a reduced price of \$159.00.

For more information, please contact Jim Switz, Trantor Systems, Ltd., 5415 Randall Place, Fremont, CA 94538. (510) 770-1400, fax (510) 770-9910. Or circle 65 on reader service card.

and easy access to business telephone listings in six Northeastern states: Maine, Massachusetts, New Hampshire, New York, Rhode Island and Vermont. The database includes over 1.7 million listings and 7,000 headings from over 300 NYNEX Yellow Pages and Business-to-Business directories. NortheastAccess allows you to search by heading or business name, by locality, area code or ZIP code. Other NortheastAccess features include news, stock quotes, financial summaries, worldwide travel information and city profiles. These additional services are provided by Videotex Development Corporation, a DELPHI affiliate.

NortheastAccess is currently available on US West Community Link Service, a gateway provided by CLM Associates and is available to US West customers in Omaha and Minneapolis/St. Paul with plans to expand service to Seattle in 1992.

The NYNEX NortheastAccess database is also offered domestically through Minitel Services Company and overseas as NYNEX USAccess, via MinitelNet.

For more information, contact Natalie Tschubarjan, NYNEX Information Technologies Company, 100 Church Street, 9th floor, New York, NY 10007-2670. (212) 513-9779. Or circle 67 on reader service card.

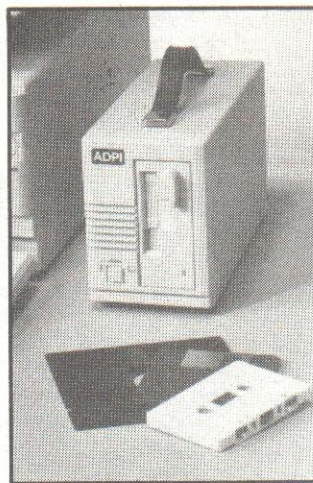


## ADPI: One for All Tape Backup System

Loss of data can easily cost a company thousands of dollars. Time spent in re-entering data or restoring floppies can be reduced to an hour or less with **One for All**. The system plugs directly into the parallel printer ports of your computer, without the use of the controller cards or special adapters.

The **One for All** tape backup, Model PT1, can safeguard critical data on PC hard drives. One system can be used with every PC in the office at a fast backup speed of over 6 Megabytes per minute. ADPI's easy-to-use software guides the user through the backup and restore modes in a "Windows-like" format. Each digital cassette holds 160 Megabytes of information.

**One for All** can be used for multiple PC, laptop, or notebook backups, confidential data control, archiving, MS-DOS to UNIX trans-



ADPI's **One for All** tape backup system for desktop or laptop computers.

fers, among other applications. ADPI offers a 30-day money back guarantee and a 1-year warranty. Suggested retail price is \$1,495.

For more information, contact: Analog & Digital Peripherals, Inc., P.O. Box 499, Troy, OH 45373. (513) 339-2241, fax (513) 339-0070. Or circle 68 on reader service card.



The SCANTEAM 2000 bar code decoder from Welch Allyn.

## SCANTEAM 2000 Makes Your Laptop a Bar Code Reader

Add bar code and magnetic stripe capability to your PC with the SCANTEAM 2000 from Welch Allyn. The SCANTEAM 2000 transmits decoded bar code, magnetic stripe and MICR data to a variety of terminals, PCs or POS devices. The ST2000 requires no hardware or software modifications, since decoded data is transmitted by emulating keyboard-terminal communications.

The ST2000 also offers a bi-directional auxiliary port for communicating with RS-232 devices, such as printers and scales. It can be interfaced with a variety of PCs and terminals, including IBM, DEC, HP, WYSE, NCR, Nixdorf and Fujitsu. Units in the ST2000 series are fully programmable, via an easy-to-use bar code menu. The advanced data formatting feature provides a powerful editing facility for optimal per-

## Konexx Konnectors Eliminate Need For Dedicated Telephone Line

As office hardware portability continues to increase in both volume and convenience, so does the need for refined methods of accessing and transmitting data. As many PC notebook and laptop computer purchasers are disheartened to learn, electronic transmission requires an analog, or single-line telephone. Transmission is not possible from public-pay phones, multi-line or PBX systems and most hotel telephones without the aid of a connection device.

Unlimited Systems Corporation has introduced its latest connection product - Model 112, which allows users to connect a modem to any office or hotel telephone, eliminating the need for a dedicated phone line.

This **KONEXX** Konnector is powered by an internal 9 volt battery or with a supplied AC adapter. Like its predecessor, the Model 108, the Model 112 has automatic voice/data switching and works with all modems (except the inexpensive line powered models).

Suggested retail price for the Model 112 is \$149. All couplers and adapters are warranted for two years. Technical support is also available.

For more information, contact Unlimited Systems, 5555 Magnatron Blvd., San Diego, CA 92111. (800) 275-6354. Or circle 62 on reader service card.

formance and compatibility with existing applications. Measuring a compact 3.9"x4.0"x1.0", the ST2000 weighs only 6.4oz. Suggested retail price for one unit is \$390.

Contact: Don Flynn, Manufacturing Market Manager, Welch Allyn, Inc., 4619 Jordan Road, Skaneateles Falls, NY 13153. (315) 685-2811. Or circle 70 on reader service card.

## OMRON Portable Fax-Modem Offers 12 Hours of Battery Operation

The latest entry on the portable fax-modem market is the pocket-sized **IMPALA 24/96** from OMRON Automation Products, Inc. The **IMPALA 24/96** provides 9600 bps fax and 2400 bps modem transmissions in a compact (4.4" x 3.4" x 0.9") package. Without batteries the unit weighs 4.2 ounces. The **IMPALA 24/96** can operate for up to 12 hours on a set of four AA alkaline batteries and features a power saver function that automatically puts the modem into standby mode when it is offline and the PC-to-fax modem interface is idle.

The new fax-modem is a Class 2 device and has built-in data compression based on CCITT V.4.2bis and MNP-5 standards. Error correction conforms to CCITT V.4.2 and MNP-2 through MNP-4. The modem supports the Hayes extended AT command set.

Seven LED indicator lights signal off hook, carrier detect, send/receive data, low battery power, high speed equipment ready and error correction conditions. The fax-modem has a speaker and dual telephone plugs. It comes with an AC adapter, telephone cable, and a connector cable with one RS-232C and one 9-pin DIN plug. Three software programs are included: **WinFax Lite** for Windows 3 as well as the DOS version, and **BitCom** for DOS communications software. All are provided on both 3.5" and 5.25" diskettes.

Suggested retail price for the OMRON **IMPALA 24/96** is \$399. For more information, please contact OMRON Automation Products, Inc., 3945 Freedom Circle, #400, Santa Clara, CA 95054. (408) 727-1444, fax (408) 970-1149. Or circle 64 on reader service card.





# The Portable 100 Classifieds

## SOFTWARE

**FAST (tm) 3x turbo cassette LOAD/SAVE** utility for Tandy M100/102, M200 (specify). See 11/89 P100 review. SASE for information. Cassette, manual \$19.95 ppd. Zwillenberg, 475 Richmond, Maplewood, NJ 07040

## HARDWARE

**Model 100 32K with Super Rom**  
\$275.00 firm. Call (308)527-3506.

**Model 200 48, Super ROM**, includes all documentation, technical manual, cables; \$285.00; Chipmunk Drive; \$115.00. Both for \$360. (215)678-6972. 9/92

**Tandy 102 32K**, Portable Disk Drive & portable Brother printer \$350.00; Tandy 1100FD 640K and modem \$450.00. (213)828-1997.

**TRS-80 Model 100 32K**, Super ROM, case, legs, adapter, seven software packages,

books. Needs new LCD screen. \$199.00. Peirce, 2948 Blairstone Ct., Tallahassee FL 32301.

**EMM, integrated ExtRAM/RAM/PDD-1&2 file manager.** Runs in ExtRAM, utilizing unoccupied space for file storage. Features aggregate file selection and file compression. Send SASE for information or \$15.00 for disk. TPSIG, P.O. Box 684473, Austin TX 78768-4473.

**Record voltage or other analog parameters** with your 100/102/200. DATAMITE A/D converter connects to cassette jack, software provides voltage readout and/or emulates scrolling chart recorder on your Tandy screen. \$66 + \$4 S&H: Jones Service & Design, 1842 S. Nugent Rd., Lummi Is., WA 98262. (206)758-7258.

**Data Acquisition with M100/102.** REI, RR1 Box 113F, Royalton, VT 05068. (802)763-8367. 10/91

**Tandy 100, 32K,PDD, DMP-130 printer**, software, cables, manuals. \$375. (312-644-0638 6/92

## FOR SALE

**TRS-80 Model 100**, includes VDI w/TWO 5.25" drives, HARD carrying case, MOST accessories, plus Amber monitor, VGC; package only. Excellent condition. Best offer (708) 837-8741. 7/92

**Tandy 200** with disk video interface, Tandy software, modem cable, cassette cable, cassette player, and computer adapter. \$250. Linda (717) 566-5411. 6/92

**Olivetti PR2300 Printer**, works well with Model 100, \$40. plus shipping. Robinson (413) 545-1591 9/92

**Model 100 32K**, Super ROM, 2 A/C adapters, printer cable, and modem adapter. Cassette, A/C adapter and two cables. Manuals, books, taped programs, program listings. \$400.00 Chris Lothian (612) 425-1340 after 18:00 CDT. 9/92

## HOW TO PLACE A CLASSIFIED AD

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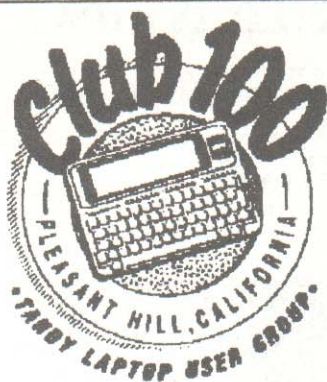
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**Rick announces more nifty new stuff and some totally excellent killer deals...**

**RAMPAC** is now manufactured by EME Systems and Club 100. 256K storage for Model 102 or 200. Light weight and small. Plugs into system bus. Access via built in software. Note: rampac combined with extRAM or XR4 allows for super fast ROM swaps. \$179 + \$5 s&h

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**Alert!!** Rick finds giant stash of computer-stuff in West coast warehouse: Model 102's 32K \$255 / Model 100's 32K \$195 / NEC 8201 16K \$85 / WP2's \$165 / Model 105 printers \$55 (\$10 s&h on equipment)

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**Tons Of Programs:** What's in the Club 100 online public domain library? Order a "Online Library Catalog Listing Update" disk and find out. \$5 (state tpdd, tpdd2, MSDOS 5.25 or 3.5 format). New, BBS Guide/Tutorial... \$10

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**Facts:** Nostalgic computing is alive and well as folks rediscover the value and fun of inexpensive, capable Model T computers. Each week we field over 1000 voice, e-mail and faxes from new and old laptop owners. There's over two million Model 100, 102, 200, WP2 and NEC 8201 owners in the world. The Model T's attributes (i.e., built in programs, long battery life, light weight, data compatibility) offer most of what folks want in a laptop computer, today.

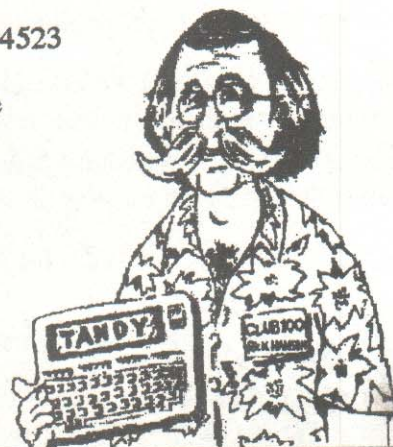
**More facts:** Most folks use their laptop for word processing. About 20% use telcom. Very few others use spreadsheets, database, or public domain programs, but interest in expanding Model T computing is growing. Club 100 has the information and items to help you get more out of your laptop. Call Club 100 and discover what you're missing. Get on our mailing list and receive a free catalog.

**HELP:** Due to overwhelming interest vs. limited staffing and time, we find it almost impossible to respond to paper mail in a timely fashion; except for catalog requests. Voice, electronic, and fax mail is your best bet for feedback and assistance.

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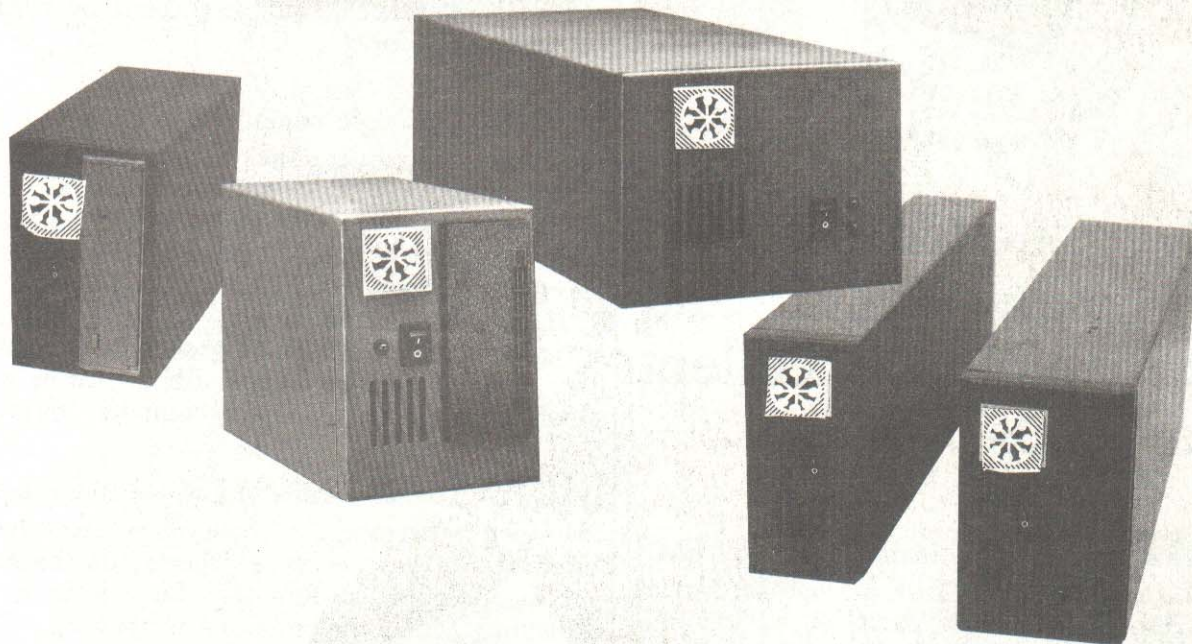
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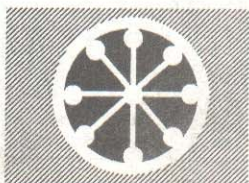
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